

Analysis of Expressway Route Design Based on Environmental Protection

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Abstract: *Currently, China's highway network is gradually being built and its scale is constantly expanding. Due to its long length and passing through different regions, highways have different natural geographical units and ecological environments. At the same time, due to the need to occupy a large amount of land and cut down a large number of trees, coupled with the production of a large amount of car exhaust and smoke during the operation of highways, traffic noise and vibration can also cause serious damage to the surrounding ecological environment. As one of the national minorities in China, Maonan nationality has a very rich and diversified folk culture in the process of development and inheritance. The content of Maonan folk songs describes the origin of human beings, the opening of the universe and the ancestors of the nation, which can convey the living habits and ideas of production and labor, love life, etiquette and customs to people. In-depth study and analysis of folk song culture in maonan traditional festivals is of great value to the promotion, protection and inheritance of maonan national culture in the future.*

Keywords: Environmental protection; Expressway; Route design.

1. EXPRESSWAY ROUTE DESIGN

Most maonan people live in the Hongshui River basin of the Pearl River system in China. After years of cultural accumulation and inheritance, the local people have formed the national culture with national characteristics. In the long river of history, the baptism and change of time make folk song culture more and more colorful and rich, and the traces of ancestors' life in the Red River basin can still be found from its content. Therefore, the study and analysis of folk song culture in the traditional festivals of Maonan nationality is of great guiding significance for the later world to understand the folk culture and historical culture of Maonan nationality, and of great realistic significance for the inheritance and development of the folk culture of Maonan nationality. For maonan people, one of the most outstanding and important components of their national culture is maonan folk song. It provides important spiritual support for the development, expansion, historical dissemination and the unity and struggle within the whole nation. Moreover, singing songs in festivals can also make the feelings between young men and women expressed and communicated, and can also serve as a medium to convey the various emotions of maonan people. The folk song culture of maonan traditional festival has its unique characteristics in the process of actual development.

Angela Carter (1940-1992) is one of the most original British feminist writers in the 20th century. Most of her works are dedicated to gender relationships, deconstructing gender stereotypes and striking a balance between these gender relationships. Published in 1977, *The Passion of New Eve* is regarded as one of the most subversive works of Angela Carter. It is characterized by bold imagination of gender relationship, intensively revolving around these factors of sexual transformation, feminist utopia and drag. In *The Passion of New Eve*, the protagonist narrates the events from dual perspectives of "character-narrator", containing a complicated narrative communication. However, the narrative mode and communication have failed to receive enough attention from critics. Under the theory framework of rhetorical theory of narrative proposed by James Phelan, the thesis analyzes Evelyn's gender identifications accordingly and explores the unreliable narration adopted by the "character-narrator" in the progression. As such, the thesis will go further in figuring out how Angela Carter implicitly but effectively delivers her gender view to the implied readers and elevates readers' ethical judgements. In turn, as an indispensable part of narrative communication, readers are also required to engage actively in exploring the theme of "passion" in the title, which generates disparate meanings at different stages of gender transformation.

1.1 Route selection of highways

Actively carry out the protection of cultural relics and precious tree species. In the design of highway routes, it is necessary to avoid occupying arable land, ecological environment, agricultural ecology, etc., maximize the protection of the natural ecological environment, make the design concept of highway routes meet the

requirements, try to eliminate damage to cultural relics and natural ecological environment, and effectively improve resource utilization [1]. As one of the ethnic minorities in China, maonan has been developing and growing continuously since its emergence. Although the overall number is small, it still has extremely strong national power, which comes from the pure heart and extraordinary wisdom of maonan people. Generally speaking, traditional festivals celebrated by maonan include Spring Festival, Mid- Autumn Festival, Dragon Boat Festival, Tomb-sweeping Day and Fen Long Festival [1]. The celebrations of Spring Festival, Mid-Autumn Festival, Dragon Boat Festival and Tomb-sweeping Day are basically the same as those of zhuang and Han people. Fen Long Festival is a unique festival of maonan people, which is intended to pray to the gods for a good harvest. Whenever traditional festivals come, maonan people gather together to celebrate them through dances, songs and other forms. The celebration can not only make people feel happy, but also promote national unity and strengthen national emotions, and also enable the inheritance and development of values such as culture and customs of their own nation.

1.2 Common Linear Design of Freeways

Curve design should meet the requirements of flexibility and be a specific indicator of route design. In highway design, curve design is generally used because it not only meets aesthetic requirements, but also meets safety standards. Compared with straight line analysis, curve design can better adapt to complex terrain conditions. The curve design method can help drivers focus more on driving the vehicle and ensure the safety of traffic operation.

Circular curve is one of the important alignments in highway alignment design, and is generally applied to the transition section of highways. A reasonable circular curve design method first ensures that its radius meets the requirements and that both the front and rear lines can meet the standards of aesthetics and comfort. After the corner radius is determined, the design of the horizontal curve can be carried out, making the mileage of the large radius curve relatively smaller than that of the small radius curve, and the line shape more smooth. In the design of circular curves, ensure that their length and smoothness are qualified.

S-shaped curves are set in the terrain conditions of mountains and heavy hills. Generally, the design of this line is mainly through the symmetrical connection of reverse curves. The length and size between the two directional curves can meet the requirements of standards and ensure the quality of the line design [2].

2. THE DESIGN OF HORIZONTAL AND VERTICAL ALIGNMENTS SHOULD BE TAILORED TO LOCAL CONDITIONS

The design of the horizontal and vertical alignment should meet the rationality standards. In order to make highway construction more scientific and effective, a combination of horizontal and vertical directions is generally adopted. The design of horizontal and vertical alignments belongs to a comprehensive design method, so the difficulty of design is relatively high, and a lot of effort needs to be invested in the design, combined with specific situations. Make comprehensive statistics and analysis. In the design, it is necessary to ensure that the horizontal and vertical lines meet the requirements of balance, ensure that their linear indicators meet the standards, reasonably select terrain, channels, bridges and culverts, meet the local terrain conditions, and ensure that the highway linear design meets the requirements of safety, green, and environmental protection.

The reasonable design of the route section is also extremely important. It can avoid damaging the local ecological environment, fully protect geological conditions, ensure that the design of highway sections meets the requirements of scientific and reasonable, and eliminate excessive land resource occupation to ensure the smooth progress of highway construction. For areas with harsh and complex geological conditions, data exploration and actual situation analysis should be carried out in the design, and scientific and reasonable methods of bridge and roadbed construction should be adopted. Therefore, the overall design of the road baseline has high difficulty, and the form of separated subgrade will be applied in practice. Based on this, it can effectively reduce the engineering quantity, avoid the increase in tunnel and bridge excavation construction volume, shorten the length and size of engineering construction, thereby preventing soil erosion and effectively improving the level of ecological environment quality [3].

3. DYNAMIC ROUTE DESIGN

In the process of terrain route design, it is generally necessary to choose a suitable method based on the specific local situation, while ensuring that subsequent operations are scientifically and reasonably required, such as

drainage design, safety passage design, bend superelevation design, etc., to avoid any impact and application on the highway alignment design. In addition, the design of highway routes requires crossing mountainous areas. Therefore, when selecting the route alignment design scheme, cross section design schemes such as small slope extension and large slope uphill should be used, with the main purpose of ensuring that the longitudinal height difference meets the requirements. The application of this cross-sectional design form effectively prevents the occurrence of faults during heavy load accidents, avoids causing unreasonable soil conditions, improves land resource utilization, and conforms to the effect of environmental protection.

3.1 Orality

During the development of maonan nationality, most of the folk songs sung by its people were created orally by local people in their work and life, and were spread and developed orally. In the process of singing duet songs during festivals, maonan people also adapt and process the basic tunes and contents to spread to the present day. It can be said that the development of maonan folk festival culture has been created by the talent and wisdom of countless local people, which is the crystallization of wisdom and real experience of thoughts and emotions of all maonan ancestors [2]. James Wood once wrote dismissively of the plots in *The Passion of New Eve*. "It is not difficult not to laugh [...] perhaps this is the intention" [1]. All these suspicious comments attest to the critical pressure that Angela Carter had to resist after the publication of *The Passion of New Eve*. In addition, for long, *The Passion of New Eve* has seen a bad reputation for its pornographic plots. Needless to say, *The Passion of New Eve* has become one of the most controversial works for Angela Carter.

Though the book has been slashed for its controversial and revolutionary themes in the past, it is now highly regarded for its bold insights on gender identity. Jean Wyatt praises the book for "a bold specification of male desires" [2]. Sarah Gamble laments the hypocritical ignorance of the book if simply for widely publicized notoriety [3]. Both acclaims and criticisms for *The Passion of New Eve* point to Carter's most subversive attempts to maintain the highly risky deconstruction of gender construction ever. However, there has been a profound tradition of misunderstanding in terms of gender ethics in *The Passion of New Eve*.

3.2 Rural Characteristics

The Hongshui River Basin has its unique charm and characteristics in the process of natural development, whether it is natural production conditions, cultural traditions, geographical climate, dialect and pronunciation or social changes. People also have their own customs and habits, aesthetic taste, personality characteristics and lifestyle in accordance with their own life. Due to the long distance from the outside world, the overall traffic is closed. Therefore, people living in the magical and charming Hongshui River Basin have different cultural backgrounds and development trends from other nations. It is in such a "peach garden" in real life in wonderland, soul get purification and precipitation, nature will also be different in terms of the creation of the folk song form, the syllables, turning method, music structure, mode, etc are also characteristic in full accord with local development, and in the process of spread in carrying forward the formed with the characteristic of national development has folk song [3].

3.3 Improvisational Character

Although the Maonan nationality has experienced several years of development, the total population is still small today, and the national writing has not been formed in the process of development. In the process of inheritance and development of folk songs in traditional festivals, the main way and channel is singing and playing. Learners do not need to apply music and other aspects, only need to rely on their own hearing, memory and so on. Although this method sounds simple, it is very difficult to implement in practice. As a result, many excellent artists and singers of Maonan nationality need to condense their talents and ideas in the process of inheritance, so as to adapt or improvise the whole song [4]. Even though the changes in the singing are only partial changes to the relatively fixed tunes, the development and accumulation of generations after a long time still promote the continuous development and enrichment of Maonan folk songs.

In addition, maonan folk songs also have certain versatility in the daily singing and creation process. They can entertain themselves, express the joy and sorrow in daily life, and express their strong and abundant emotions through singing local folk songs. Of course, it can also be used as a performance, in front of the public will have their own ability to easily control the music, so as to attract others' love and appreciation. In addition, for young people, Maonan folk songs can also become a media for communication, so that the distance between them can be

narrowed under the foil and atmosphere of music. In a series of ceremonies such as weddings and funerals, maonan people also choose folk songs as the main form of performance. In a word, for the maonan people, folk songs are a form of artistic expression that can be improvised. They can be used as children's play, or as formal music, They are closely related to the lives and habits of the local people and have important functions and values.

4. ENVIRONMENTAL ISSUES THAT SHOULD BE NOTED IN ROUTE DESIGN

In terms of the development of The Times, maonan folk traditional festival culture audience is less, but for the development of the whole country, still belongs to the indispensable intangible cultural heritage, to maonan years of history and culture, customs and habits, etc., through a cheerful tone , both to show participants in the festival for the people the feeling of happiness,

It can also show the optimistic and cheerful character of maonan people to others. In recent years, for the inheritance and development of Maonan culture, the local government has also actively put forward corresponding optimization strategies, aiming to further protect and spread the folk song culture of Maonan traditional festivals through effective measures.

4.1 Control of route direction

When designing the highway route, the key to controlling the route direction is to comprehensively consider geological factors, the starting and ending positions of the route, and the extension plan, while also controlling the entrances and exits of the town and the airport port. The location of the entrance, as well as the intersection location and mode of important railway and highway trunk lines, also consider the distribution of power grids, communication, underground pipeline networks, various mineral resources, land resources, and water resources. In the planning and design of the route, it is necessary to ensure coordination with highways and the environment, try to avoid densely populated areas such as towns, and also avoid areas such as scenic spots, historical sites, and military facilities. On the basis of ensuring the above requirements, it is also necessary to try to ensure the continuity and balance of the route, ensure coordination with the surrounding environment, and comply with the design requirements of harmonious and three-dimensional landscape. If the road route design needs to pass through scenic spots or historic sites, it is necessary to fully consider the rationality and economy of the linear trend, and also combine it with the surrounding environment, so as to achieve "transit without entry" and not damage the Natural landscape. If there is a conflict between the road design and the protection of historic sites, always put environmental protection in the first place [4].

4.2 Utilization of land resources along the route

Before carrying out route design, it is necessary to conduct on-site investigation and research along the area that the route needs to pass through, and carry out reasonable layout of the route based on the development planning requirements and actual land resources of different regions along the route. For example, it is possible to occupy less or no high-yield farmland and economic parks in plain areas, and try to occupy wasteland and wasteland areas as much as possible; For mountainous areas, it is advisable to occupy as little or no economic forest areas and fields as possible, and instead occupy barren hills and barren mountains. For the above farmland and other areas, the occupation of land resources can also be reduced through retaining walls or Viaduct. Inheriting maonan folk song culture in college education is one of the most important and sustainable development measures at present. For the inheritance work, music teachers at all stages are not only individuals, but also key figures in the future development of Maonan folk songs. Consequently, for in maonan local personnel engaged in professional music teachers, should not only have excellent education technology and education quality, also necessary to master a lot of skills and knowledge related to the development of the Maonan , and intensely aware of national culture, folk culture heritage is significant and precious, to lead the students to learn folk song culture, In the process of growth, the culture is continuously enhanced and inherited[5].

4.3 Protection of water resources along the route

In the design of highway routes, it is prohibited to cross the designated primary protection zone for drinking water sources, while also avoiding water areas such as farmland irrigation and aquaculture reservoirs as much as possible. Construction can be carried out downstream of the water body. If it is inevitable to occupy the above-mentioned water areas during construction, efforts should be made to restore them or isolate and protect the water quality. If it is really impossible to avoid, the hydrogeological conditions of the Source water protection area need to be reviewed in detail during the route design phase. Warning signs should be set up in the protection area, the

guardrail design should be strengthened, and the anti-collision guardrail should be raised. Runoff water collection system should be reserved in the bridge deck design. During the actual construction phase, reasonable arrangements should be made for the construction period to prevent construction operations during the flood season; It is strictly prohibited to take water upstream of the water source to ensure sufficient water supply of the water source; Mixing stations and prefabrication sites shall not be set in the Source water protection area, and the construction site shall be watered in real time to prevent flying soil and dust.

In addition, it is necessary to avoid water bodies that have important economic benefits, tourism value, and health benefits as much as possible. At the same time, when occupying water bodies, it is necessary to avoid changing their flow direction or causing compression of water sections, in order to avoid blocking and blocking water flow and causing pollution to the surrounding water and soil resources.

4.4 Soil and water conservation issues along the route

In order to meet the requirements of soil and water conservation, it is necessary to minimize the damage to the environment caused by high filling and deep excavation in the line design, and to minimize the height of roadbed filling in plain areas as much as possible. Through appropriate design of drainage and protection engineering, While stabilizing the roadbed, it also achieves land resource conservation and environmental beautification. In mountainous areas, it is better to ensure that the road is integrated with the natural environment by separating the upstream from the downstream, or cross the gully development section by Viaduct. The cutting of the mountain is minimized through the design of comprehensive drainage system and engineering protection measures to avoid water and soil loss. If we want to further inherit and develop folk song culture of Maonan traditional festivals, relevant managers should be aware that it is one of the most important measures to deliberately cultivate some excellent Folk song singers of Maonan as inheritors. The government and relevant administrative departments should support local singers to complete the transmission of folk songs, and build the corresponding Maonan national heritage base, and strive to create the national culture development brand consistent with local characteristics, so as to promote the further inheritance and development of folk culture in the traditional festivals of Maonan. And can make a contribution to the blooming of every ethnic culture in China.

4.5 Ecological and environmental issues

Highway route design, especially for mountainous areas, should pay special attention to the protection of the natural ecological environment. We cannot blindly use traditional alignment methods to design the route. We need to fully consider factors such as the actual terrain of the construction area and the ecological environment of the mountains, and reasonably design the route direction. At the same time, try not to carry out a large amount of soil filling and excavation work as much as possible, and integrate the highway with the nearby ecological environment. Considering the geological cross-section conditions that may occur during the construction of highways, various roadbed forms can be adopted to harmonize the design scheme of mountainous highways with the original terrain and topography, achieving the goal of protecting the ecological environment. With the improvement of people's living conditions, the tourism industry develops rapidly. The unique geographical advantage of maonan nationality makes it have an excellent help in developing folk song culture. The inheritance and development of folk song culture can be promoted through cultural and art festivals and various types of tourism festivals [6]. For example, you can regularly go to the local "tonggu mountain song Art Festival", combined with the local people's customs and habits, production and life adapted and chopped folk songs for comments, and in the festival of the singing, development, so as to truly realize the development and spread of culture, make it shine in the national art palace.

5. KEY POINTS OF ROUTE ENVIRONMENTAL PROTECTION DESIGN

When carrying out the overall design of the route, it is necessary to collect corresponding data based on comprehensive consideration of factors such as social environment, ecological environment, ambient air, and traffic noise, and to conduct technical analysis and demonstration in accordance with relevant national regulations on environmental protection. For example, if the route design involves water sources and it is indeed impossible to avoid them, it is necessary to conduct sufficient research on the geological conditions of the water sources in the construction area, provide isolation and protection, and strictly prohibit polluting and destructive construction operations in the water sources, especially in the upstream area (crossing the first level water source protection zone is prohibited).

When designing linear shapes, the first step is to try to match different linear shapes such as straight lines, spiral lines, and circular curves as reasonably as possible in the design of flat linear shapes, and to form a flat linear shape mainly composed of curves. For the linear design of the vertical section, it is recommended to ensure driving safety through gentle longitudinal slopes and vertical curves with larger radii, while expanding the sight distance and beautifying the road surface. For designs with a wide cross-section, it is best to flexibly apply the separated cross-section, and to appropriately slow down the roadbed slope or adjust the slope change points to ensure that the slope is as close to the ground as possible. The route environment design also needs to maximize the use of natural scenery, and design various Natural landscape or scenic spots on the inner side of the curve to ensure that the road line is integrated with nature.

For the design of route landscape reconstruction, not only should greening be done well, but also the design and construction of structures along the line should be done well. When designing greenery, it is necessary to utilize different combinations of vegetation according to local conditions to ensure their beautification of the road, stability of the roadbed, and safety of vehicle driving. For the structures along the line, they should meet the local architectural style and cultural requirements, or form a unique style through diversified styles.

When designing highway routes, it is necessary to consider some environmental factors, and through the judgment and calculation of these factors, the optimal design route can be ultimately obtained. The environmental factors mainly include the occupation ratio of land and cultivated land, whether geological disasters are induced, the degree of impact on ecologically sensitive areas, whether corridor effect is generated, whether water and soil loss and pollution are caused, whether there is demolition and resettlement of residents, whether there is Noise pollution and atmospheric pollution [4].

6. CONCLUSION

Highway construction meets the needs of social development and can also have adverse impacts on the ecological environment. Therefore, in the process of route design, it is necessary to do a good job in survey, investigation, and argumentation to minimize the environmental impact of highway construction. In highway design, it is necessary to realize the collective argumentation analysis and creative analysis of multiple experts, so that highway construction can achieve the coordination and unity of natural, cultural and other environments, and promote and develop each other. In highway construction. Integrating environmental protection concepts, enhancing people's environmental awareness, achieving effective protection of the ecological environment, improving the quality of highway operation, and laying a solid foundation for achieving sustainable social development.

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