Application Research of Barrier-free Design in Municipal Road Design

Yanchun Yu

College of Architecture Engineering Jiangsu Open University, Nanjing, Jiangsu, 210036, China

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Abstract: According to statistics, China's total population is close to 1.4 billion, and it still maintains a slow growth trend. At the same time, the population is aging, and in order to meet the needs of people's transportation, in the process of municipal road design. Applying barrier-free design is critical. Therefore, this paper first expounds the concept of barrier-free design concept, then analyzes the development status of barrier-free design concept, and finally studies the application of barrier-free design in municipal road design with practical cases, hoping to promote the development of China's transportation industry. Helped.

1. Introduction

China is the most populous country in the world, and the trend of population aging is very obvious. How to meet the traffic of many elderly people and disabled people has become an urgent problem for cities. The barrier-free design is to meet the design of traffic travel for these obstacles. It can be used in municipal road design to achieve good results. Therefore, it is very important to study the application of barrier-free design in municipal road design. significance.

2. Overview of Barrier-Free Design Concepts

Today, with the rapid development of social economy, the concept of accessibility has also been developed. According to years of research, at present, accessibility services are widely used, including not only the elderly and the disabled, but also infants and women. People with disabilities can enjoy accessibility services[1]. However, there are significant differences between the barriers and the disability and the elderly. The main reason is that there are some physical disabilities in the disabled, and this deficiency limits their behavior, but this restriction will pass. Specific methods to solve, barrier-free design is an important way to solve the limitations. In different environments, the concept of barrier-free design will also change. If the environment in which disabled people live is relatively flat, there are fewer obstacles, but disabled people will be troubled in going up and down the building and traveling. Therefore, the application of barrier-free design in the design of municipal roads requires consideration of the actual situation of the city, so as to constantly adjust and improve the design concept. Under the premise of implementing people-oriented, the design of the municipal road is good for solving the problem faced by the obstacles trouble, creating more convenient space for the obstacles.

3. The Status Quo of Barrier-Free Design Concepts in Municipal Roads

As far as the current situation is concerned, there are still some shortcomings in the barrier-free design of municipal roads in China. The main reason is that China's barrier-free design concept started late, and compared with Western countries, there is obvious backwardness. Therefore, Chinese researchers have been Committed to the study of barrier-free design concepts, I hope to narrow the gap between China's barrier-free design and other countries through research. Nowadays, barrier-free design has emerged in China's cities. For example, in large spaces such as shopping malls and amusement parks, barrier-free facilities are increasing year by year. Commonly include the raised buttons set in the escalator, the exclusive seats designed for the obstacles in the bus, etc. The emergence of these barrier-free infrastructures reflects China's emphasis on barrier-free design.

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However, due to the limitations of these barrier-free facilities, they cannot be popularized throughout the country. In some regions and cities, there is a lack of attention to people with obstacles, no barrier-free design in the design of municipal roads, and the legitimate rights and interests of people with disabilities are difficult to secure.

4. Application Research of Barrier-free Design in Municipal Road Design

Based on the concept of people-oriented and barrier-free design, a city has adopted barrier-free design in the design of municipal roads to meet the needs of traffic travel for disabled people. It has reflected from the perspectives of visual impairment design, physical obstacle design and language barrier design. Obstacle design and achieved good results. Next, the author will use the above three angles as a starting point to study the application of barrier-free design in municipal road design.

4.1. Design in limb disorders

The so-called physical disability is mainly disabled people. In short, it is due to physical defects, people who need to rely on crutches and wheelchairs. This kind of obstacle group will feel very inconvenient when traveling. If the municipal road is relatively flat, then it will not feel Any discomfort, once the road is rough or there are ups and downs, its actions will be seriously affected [2]. Therefore, the application of barrier-free design in the design of municipal roads requires mastering the angle of slope inclination, and at the same time ensuring the smoothness and smoothness of the slope road. The purpose is to allow the wheelchair to operate normally under slope conditions and avoid wheelchairs. The impact on the movement, In addition, in the process of designing the slope of the municipal road for people with physical disabilities, the height and width of the slope road should be considered to ensure the organic combination of the two, and at the same time, the road should be inspected. Before the barrier-free design, it is necessary to design a number of drawings and manuscripts in advance, and select the most suitable drawings or schemes among the many manuscripts in combination with the actual situation, so as to ensure that the scheme of the barrier-free design of the municipal road can be fully displayed, giving the design plan more High feasibility and practicality to meet the needs of trafficking for people with disabilities.

4.2. Design in visual impairment

When designing municipal roads for people with disabilities, the Accessibility Design Code should be used as a basis for rational design of blind roads and barrier-free roads. Barrier-free roads can also be called barrier-free ramps. The slopes existing in the area are mostly triangular slopes and single-sided slopes. The main purpose of designing services for the disabled is the design. Under normal circumstances, such barrier-free design is aimed at people with visual impairment, such as blind people, high myopia, etc., which belong to the exclusive channel of this group of people, so they are blind, and visually impaired people walk through the blind road through the soles of the feet. Identify the direction. Normally, the blind road will be laid inside the sidewalk. During the design process, the position of the blind road needs to be controlled. In particular, the distance between the blind belt and the green belt must be kept at about 0.4m. The width of the blind road should be greater than 20cm and less than 30cm. It is also necessary to set the cue street sign at the turn and mark the blind track action in the cue sign. At the same time, in the specific design, we must also avoid objects that may harm the visually impaired people. For example, the city uses a blind circle to remind people with visual impairment. Blind roads must not conflict with normal sidewalks. If there is a conflict or cross between the two, the slope design method should be used to adjust the form of the blind road to facilitate the action of the visually impaired.

When designing a blind road in a municipal road, a guide road sign should be set every 50cm or 100cm, the height should exceed 1.3m, and the accuracy of the guide sign should be guaranteed[3].

4.3. Design in language barriers

When making urban road barrier-free design for people with language barriers, it should ensure

the conciseness of the logo design, and at the same time ensure that the logo is in a conspicuous position, so that people with language disabilities can find the indicator in a short time and understand The meaning of the logo. In the process of designing the signboard, it should be combined with pictures and texts, the purpose of which is to let the obstacles accurately interpret the meaning of the signs. At the same time, it is necessary to make the text and the picture feel concave and convex, which can bring a better experience to the visually impaired. In addition, in the design process, children and the elderly should be considered. The main consideration is their ability to recognize pictures and words. The symbols and signs should be adjusted according to the actual situation to ensure that most obstacles can be Get the information you want to know by watching the pictures and text in the sign.

4.4. Principles of barrier-free design

The state attaches great importance to barrier-free design and has developed principles for barrier-free design. The principles are composed of the following points:

Trafficking for people with disabilities is the main purpose of barrier-free design, and safety is the most important principle. In the case of barrier-free design, the principle of safety needs to be reflected. Taking the above-mentioned barrier-free design as an example, in order to ensure the safety of visually impaired people, the city has designed a blind road and kept the blind road and the lane at an appropriate distance, which greatly ensures the traffic safety of the visually impaired people.

The principle of practicability is the principle to be followed in the process of barrier-free design. The design department should reasonably carry out barrier-free design according to the characteristics of different obstacle groups. For example, in the above design, the city is respectively a group of people with physical disabilities, visually impaired people and language. The barrier population was designed to be accessible to maximize the barrier-free design. Blind lanes designed for people with visual impairments, slopes designed for people with physical disabilities, and signs for people with language barriers follow the principle of practicality.

3.4.3 Accessibility

The barrier-free design should be concise and clear, and improve the convenience of the use of obstacles. For example, when designing a blind road, it is not appropriate to set obstacles in the blind road or steep slopes on the road. The reason is mainly to avoid people with visual impairments from being harmed.

For example, in the process of setting blind track signs, it should be set in a suitable position, not too far or too close, the setting position is best to choose on the side of the road, and the height is reasonable, so that adults can easily touch. Children can also come across. At the same time, it is necessary to organize visually impaired people to participate in the training, so that they can grasp the content indicated by different signs, so that the utilization rate of barrier-free roads is improved.

4.5. Application recommendations for barrier-free design in municipal roads

The application of barrier-free design in the design of municipal roads should implement the people-oriented concept and adopt a scientific design method. It must reflect the humanization and can not make the barrier-free design flow on the surface form. Only in this way can the function of barrier-free design be fully realized. At the time of design, they should be put in their place to think about them, consider their actual situation, and fundamentally solve the travel difficulties they face. In addition, after the application of barrier-free design, the relevant departments should organize personnel to clean them regularly, keep the barrier-free design clean, and reduce the safety hazards of barrier-free design, thus ensuring the safety of the disabled.

5. Conclusion

In summary, in the context of the new era, the number of elderly and disabled people in China is increasing, and the base of the barrier population is increasing. To meet the needs of the disabled, the author suggests that researchers should strengthen the study of barrier-free design concepts.

Strength, improve the application of barrier-free design by improving the barrier-free design concept. At the same time, in the application of barrier-free design, it is necessary to consider the actual situation of different obstacle groups and carry out targeted design for them. Only in this way can the function of barrier-free design be fully realized.

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References

[1] Cai Shiqiang. Application of barrier-free design in municipal road design. Engineering and Technology Research, 2019, 4 (16): 188-189.

[2] Wu Yuxing. The realization of barrier-free design in the design of municipal roads. Green building materials, 2019 (07): 107-108.

[3] Lu Li. Application of barrier-free design concept in municipal road planning and design. Residential and real estate, 2019 (18): 102.