

Research Article

Study on the Design and Present Situation of Walking Space of City Commercial Block in Daqing

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Abstract: First of all, the main commercial districts are investigated in Daqing City. The design contents of pedestrian space that include plane shape, space scale, building form, node space, side interface, environmental facilities and transportation are researched and analyzed. Secondly, the existing problems in the design of pedestrian space are analyzed, which concern five aspects: forward looking design, spatial scale, design elements, plane form and environmental facilities. Finally, the design strategies for pedestrian space are put forward including humanization, regionalization, seasonalize and humanity.

Keywords: commercial block, pedestrian street, space design

INTRODUCTION

The pedestrian space of city commercial district is an important place for living and shopping. It is not only a commercial place, but also a center of social intercourse. A large number of urban commercial pedestrian spaces were constructed, in the boom of commercial pedestrian street construction in China. But people feel that the quality of public life in the city is not improved; in contrast, it is difficult for us to meet social requirements with a single design pattern, only giving people a greater disappointment. The design of pedestrian space in urban commercial district should not only emphasize the respect and care for the users, but also embody the idea of people-oriented, and pay more attention to the expression of regional culture and regional characteristics. Therefore, the author makes a survey on the pedestrian space of the main commercial district in Daqing City. Through the analysis of existing problems, valuable design strategies are provided for the design of walking space.

Analysis on the present situation of pedestrian space in Daqing City

The distribution of commercial center in Daqing City

At present, there are formed commercial centers in Daqing city: Xinchao-Yinyi, Tangren central, Battle street-Industry & Furniture trade central, Wanda, New Mart, Wal-Mar district and Longfeng shopping malls. Figure 1 is a schematic of distribution of these commercial districts. Along with the new main business

investment being settled, the former urban commercial layout which is single, low-end, lack of large projects, less big brands and irrational distribution is rapidly replaced by new and modern business pattern. Therefore, local commerce entered “multi business time” in Daqing [1]. There is indoor or outdoor Pedestrian Street in the street planning of Wanda Plaza and Lenovo technology city; other existing commercial areas are people and cars’ mixed traffic mode.

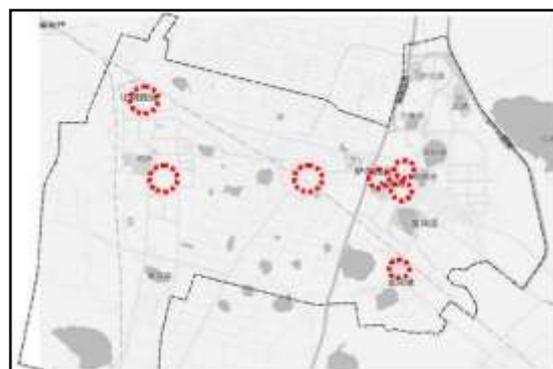


Fig-1: Distribution of business center in Daqing City

Survey and analysis on the pedestrian space of the commercial district in Daqing City

Flat form

The form of walking space in existing Commercial Street is relatively single in Daqing City. As shown in Fig-2, the general street type is linear or L. the space

nodes or the large area is not used actively, but used as a debris yard or parking often.

Space scale

The effective height-width ratio of the street space is between 1:3 and 1:2 in most commercials of Daqing. The advantage of this space is that the enclosure of space is better, the sight is free, the space is inward



Fig-2: New Mart Commercial Block

Architectural form

The commercial buildings are full of modern architectural style. The buildings have very strong commercial atmosphere, and reflect the times and the characteristics of the Northern-area building in Daqing, but lacking the expression of regional characteristics and human feelings.

Environmental facilities

Large parking space is around most commercial areas. People and cars on the streets are mixed. Green is little and lacking the landscapes for people to leisure.



Fig-4: WAL-MART Business District

Problems in the Design of Pedestrian Space in Daqing City

Design is lack of predictability and forward looking

The planning and design of commercial space are lack of development and future use. Such as the width of the road is too narrow, the street furniture is too less, space spot and parking spaces are in low deficiency. As a result, the walking road is occupied by vehicles, and the pedestrian activity is severely disturbed by the vehicle. There is no place to stay in the shopping

oriented, and people walking on the street feel comfortable. But, the effective height-width ratio of some streets reaches 1:5, such as department store commercial block in Fig-3. The spatial definition is too weak, and the street space is too empty, so that the space scale will produce a sense of exclusion and discretization.



Fig-3: Department Store Commercial Block

There is no special place for people to fitness and small places to stop or rest, so streets are less attractive.

Transportation

Although the main entrance of the building has a distribution center, parking space is designed around most commercial blocks at the same time, which results in seriously mixed people and cars, and a poor shopping environment. As Fig-4 shows, there are outdoor pedestrian streets in a few blocks, where people and cars can be diverse, so shopping atmosphere can be formed well.



Fig-5: Yard of a Commercial Block

process, as well as to hold activities for the business or the masses.

Spatial scale is unreasonable

The problems in the design of the space scale of the commercial district have very serious negative effect on the feeling of the pedestrian or the merchants' business. Shops along the street on both sides in commercial area are often divided by four lane carriageway in Daqing City. This would not help

pedestrians to get good space feeling, and it is inconvenient for the pedestrians walk through the two sides. The length of the street is more than the best walking distance. In winter, when the snow cannot be removed in time, it is not convenient for shopper's to walk on the smooth pavement. It will affect the consumption and leisure activities. Streets are not wide enough and comfortable to stay, talk and feel the sun on the streets when the weather is fine in winter.

Design elements are not comprehensive

Due to climate factors, the landscape design of the commercial district is monotonous. Owing to the harsh weather in winter, green plants used in cold city are fewer, and green cannot change with the seasons, and green landscape is very simple. On the other hand, when water freeze or dry in winter, the utilization rate is extremely low, and related facilities such as fountain is highly susceptible to frost.[2] So, the use and construction of water environment in commercial street is also very less in Daqing City. Greens are simple and water is lack, the absence of these two elements in environmental design makes the quality of space environment greatly reduced in Daqing city.

Block place form is unreasonable

Streets in commercial block are generally in linear type; there are few curves or line. Straight streets make

people clear about street space and convenient to reach the destination. But the street and commercial space is formed closed and single. It often causes monotony in the space form and interface, especially in winter.

Retractable changes of street space are less; the node spatial is not unevenly distributed; the spatial form is not closely related to surrounding buildings; and the scale of Front Square in main building is insufficient and crowded. All of these problems should be improved.

Environmental facilities are not perfect

These are very typical problems in commercial blocks: environmental facilities cannot meet the needs of the use; all kinds of facilities are not complete; design without considering the climate conditions cannot be used. In Figure 6, the results show that less of rest place and seats in the commercial block is a very prominent problem. Through the statistical results in Figure 7, pedestrian are looking forward to facilities such as street cafes, greening, different square and affiliated facilities, indoor resting area, children's recreation area and other.

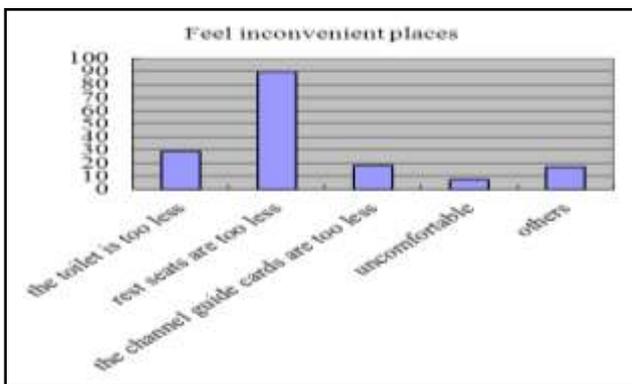


Fig-6: Comfort Analysis

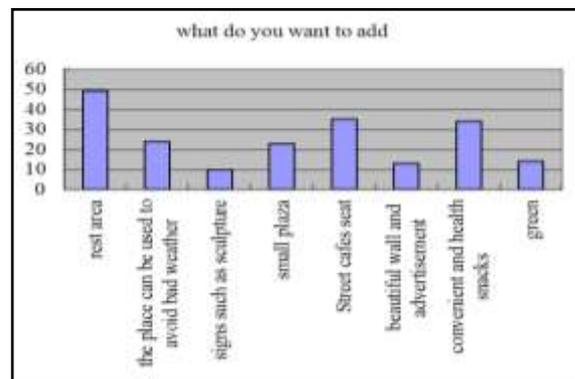


Fig-7: Business District Facilities Analysis

Design Strategy of the Pedestrian Space for Commercial District in Daqing City

Humanization

The outer space design should be based on the Japanese architect Ashihara Yoshinobu's idea "One-tenth-theory". The theory indicates that the scale of outer space can be used to measure the internal space for 8-10 times. The scale of the node space and the street profile should be coordinated with the expected number of users, so that people can make activities in a clear and friendly space, and not in the half open or narrow regional. When facilities are layout in the outdoor, on the one hand, modulus of 20-25m is used to control space design [3], such as seat or flower beds are arranged in each 20-25 meter; on the other hand, according to the position of the streets and the building

to simulate the line of the sun. The facilities to stop and rest for people are arranged to the side irradiated in spring, autumn and winter. This design can increase the vitality of the streets, and can make people enjoy more of the sun.

Regionalization

The space design of the city commercial district in the cold city should be able to reflect the characteristics of climate, local architecture and the culture. When the length of the street is designed, it is shorter than other climatic regions, and the distance between the main commercial buildings is relatively short. In order to get more sunshine in winter, the width of the streets should be larger than the South Street. So people are willing to walk on the streets when weather is good in cold winter.

The width of the general commercial street is 10-20 meters [4]. For the cold city, this value should be appropriately increased. Building in the block is a very important element of expression. All of the aspects from the architectural design, functional division, the relationship between void and solid, building facade design to architectural symbols can be used.

Seasinalize

The changes of the four seasons are the situation of a long winter and short period of spring and autumn in Daqing. Therefore, it is necessary to consider climate characteristics in the outdoor pedestrian space design. To rich space form of blocks, the following problems should be considered in the design. First of all, the methods such as Sketches, structures and the ups and downs of the ground are the priorities in the second division of space. Secondly, due to water and greening are unable to use in the half year in Daqing, generally, water and green are not designed as the theme of space. Design elements such as sketches, street furniture, structures like the gatehouse and sculpture can be used to format the topic space.

Humanity

In the attitude of humanistic care, modulus of 20-25m is used to control the distance of the street furniture in the external space design. And it can also be used to change the window state or the wall, to bring a sense of rhythm for the external space. Elements such as Sketches, green, water landscape, etc. are the main elements of the business district environment. Not only the elements have practical functions, but also they can enrich the space level and adjust the space atmosphere. These can figure the "second level contour line" of block space and are "auxiliary facilities" [5]. It is necessary to design its position, shape, size, material, and color in detail. The basic of the design is human behavior and psychological need. It means human care.

It should pay attention to the vulnerable groups in the design of walking space. The facilities should be set up including special road for the blind, touch prompts voice information, pictures and text prompts, and rest facilities for the elderly, children and person with inconvenient action.

CONCLUSIONS

Commercial pedestrian space plays an important role in modern urban life. It is the way of urban public life. It is an important way to improve the quality of the city environment. It is an important means to embody the regional context and cultural landscape. For the construction of low carbon, environmental protection, green, and livable city of Daqing, there will build a large number of commercial pedestrian space. This space design strategy of Commercial Street would play a role in the construction of the city.

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