Applied Mechanics and Materials *Online: 2012-12-13*
ISSN: 1662-7482, Vols. 253-255, pp 1130-1134
doi:10.4028/www.scientific.net/AMM.253-255.1130

The Analysis of Planning Guide Effect of Guangzhou Metro Line Five's Construction to the Non-existed Central District of the City

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Keywords: Urban planning; Railroad transportation; Metro Lines; non-existed central district; TOD

Abstract. This essay discusses the effect of what the construction of the Metro Line Five of Guangzhou has to the development of existing central district and non-existed central district of Guangzhou City. Through the investigation and research into the quantity change of the public facilities around every exit of Metro Line Five within 500 meters, the essay analyses the planning guide effect of the construction of Metro Line Five to the land development and city construction of Guangzhou.

Introduction

Guangzhou Metro Line Five is an east-west backbone traffic line that links up the old city centre and Zhujiang New Town which connects the western developing area and the eastern transforming industrial area. It runs 32 kilometers. The Metro Line Five is constructed within the city developing plan of "Expanding South, Optimizing North, Going East, Connecting West". The main purpose of Metro Line Five's construction is to relieve the ground traffic burden of the exiting city centre and then to drive earth development of non-exiting city centre.

Generally, what influences most to the construction scale of city metro line is the population of the city, on the contrary, the land scale of the city has little influence. When constructing metro line, we consider the traffic need caused by the developing population most[1], and this is the metro line construction aiming at relieving ground traffic pressure. But in recent years, there appears a new city developing mode featured by the "public transportation-oriented construction" in some developed countries and areas, and this city developing mode is called "TOD Mode" (Transit-Oriented-Development). This kind of developing mode is used in city developing broadly, especially in undeveloped areas. The developers buy the land of the undeveloped area at a low price first, and then set up transportation system, bringing about the temporal difference of land price, and at last sell the "mature land" on which the communal facilities are perfect[2]. The developers will get back the investment of the transportation system from the rising price of land. "TOD Mode" applied to the construction of non-existed city centre can promote the land development and maturity of areas passed by in theory. As an "experimental ground" of "TOD Mode", the planning guide effect of the metro line to the development of non-existed city centers hasn't got data support and scientific analysis. Metro Line Five is not purely belongs to "TOD Mode" because it also runs through the existing central areas of the city, but it also partly belongs to "TOD Mode", because it passes through the non-existed central areas of the city.

This study takes Guangzhou Metro Line Five as an example, conducting an investigation and analysis to the quantity change of public facilities within 500 meters around the 24 exits along the line. And then it scientifically analyses the planning guide effect of Guangzhou Metro Line Five to the land development and city construction of non-existed central district of the city.

The Foundation of Analysis

The Reason of Defining "500"meters Normally the radiation effect of real estate can be clarified into three zones: Core zone, the ground around the metro exit, and this is usually called the

"metro-on-ground" real estate which most possibly can store value and raise value. Closed zone, within two blocks around on which the commercial buildings, office buildings and apartments benefit most. Radiation zone, defining on location whose range is broader in suburbs.

The real estate within 500 meters around the metro exits has an obvious appreciating trend because of the metro. If the real estate is beyond 500 meters, people maybe need to transfer to bus, so the influence is smaller. Therefore we decide the public facilities within 500 meters around every exit as our analysing objects.

The division of Time This study picks April 23th, 2004 and December 28th, 2009 as division time. We studied the quantity change before April 23th, 2004, between April 23th, 2004 and December 28th, 2009 and after December 28th, 2009. Because they are the dates of press conference announcing Metro Line Five's construction and the opening time of the construction. When the Metro Line Five's construction was announced, the property developer would buy the land along the line in advance for the long-dated profit, thus causing the first construction climax. When the construction was done, people would move to the area around the line, thus causing the second construction climax.

The devision of city existing central district and non-existed central district The beginning point of the first-stage project of Metro Line Five is located on the east side of Jiao Kou terminal in Li Wan district, The line strides over Zhujiang River alongside Zhujiang Bridge radial line, then passes through the junction of Nan'an Road and Zhongshan Road eastward, then goes through Xijiao coal yard and Xichang northward, then be laid alongside the central city road. The line goes southward at the east side of Ouzhuang overpass, passing through Huangpu Road, Chebei South, Dongpu, Sanxi, Yuzhu, Dashadi and so on, then finally gets to Wenchong, Huangpu District.

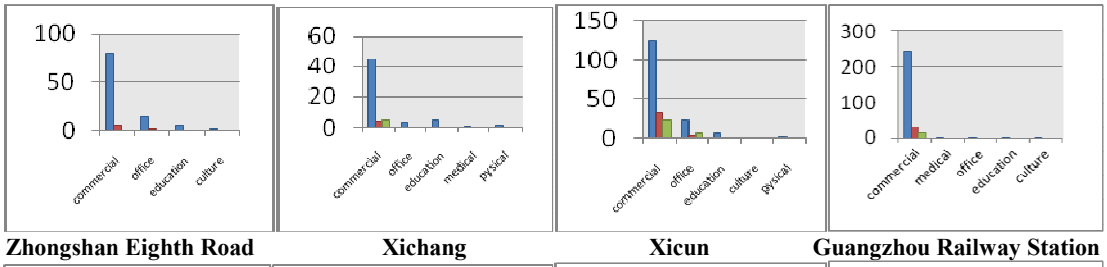
The circumstances of the city district passed by vary very much, but can be clarified into two categories: existing central district and non-existed central district. The existing central district of the city is the one in which public facilities are already perfect before the opening of the metro line. The commercial and financial businesses are already developed there. The existing central district of the city can continually be clarified into two types: the old city centre and the district centre. The stations in the old city centre include Zhongshan Eighth Road, Xichang, Xicun, Guangzhou Railway Station, Xiaobei, Ouzhuang, Taojin and Zoo Station. The stations in the district centre includes Dashadi, Dashadong and Wenchong. The non-existed central district is the one in which public facilities are not good. The non-existed central district can be clarified into three categories: The first category is the newly-planned city centre, including Zhujiang New Town district and the city villages. Zhujiang New Town district includes Wuyangcun station and Zhujiang New Town station. They constitute the new city axis of Guangzhou together with the CITIC Plaza. The other is "city villages". The stations in the "city villages" include Yangji, Tancun, Yuancun, Keyunlu and Liede Station. "City villages" were natural villages located in the suburbs before, but then became city land as city developing. The second category is the newly-developing areas of the city, including Chebei South and Dongpu Station. Although they are far away from the city centre, but the public facilities are becoming more with city expanding. The third category is "areas to be developed" which connect Guangzhou urban area and the area around. They include Jiaokou and Tanwei--two elevated stations westward, and Sanxi, Yuzhu eastward in Huangpu District.

The study conducted an investigation to the quantity change of public facilities within 500 meters around every exit before April 23th, 2004, between April 23th, 2004 and December 28th, 2009 and after December 28th, 2009.

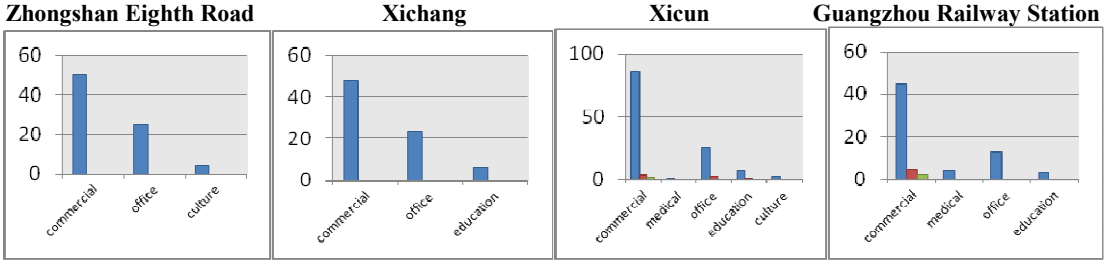
Data Analysis

The quantity change of public facilities in **existing central district** in the three time slots:

The Old City Center ■before 2004/4/23■2004/4/23-2009/12/28■after 2009/12/28

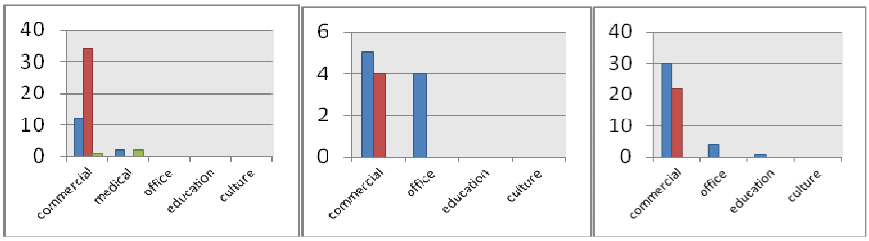


Zhongshan Eighth Road **Xichang** **Xicun** **Guangzhou Railway Station**



Xiaobei **Taojin** **Ouzhuang** **Zoo Station**

District Center ■before 2004/4/23■2004/4/23-2009/12/28■after 2009/12/28



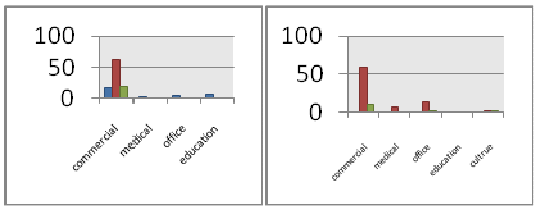
Dashadi **Dasha East** **Wenchong**

From the date and graphs, we can get the quantity of newly constructed public facilities nearby the eight exits in Guangzhou old city center between April 23th, 2004 and December 28th, 2009 occupies 5.6%，7.69%，17.86%，10.96%，0%，0%，7.58% and 6.94% of the total quantity of public facilities. There were many small-scale businesses emerging in Xicun station, however, in other stations, there is little change. There are more commercial and financial businesses between April 23th, 2004 and December 28th, 2009 in Huangpu District and the quantity occupies 66.7%，30.7% and 38.6% of the total number, but the real estate is mainly small-scale commercial businesses.

The quantity change of public facilities in **non-existed central district** in the three time slots:

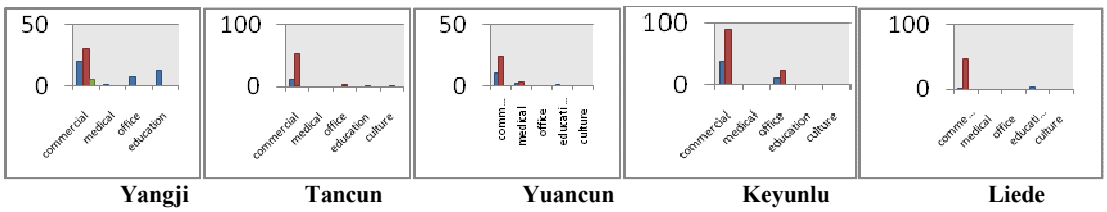
Newly-planned city center

Zhujiang New Town District ■before 2004/4/23■2004/4/23-2009/12/28■after 2009/12/28



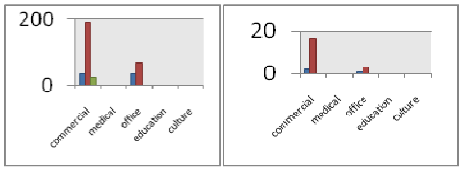
Wuyang Cun **Zhujiang New Town**

"City Villages" ■before 2004/4/23■2004/4/23-2009/12/28■after 2009/12/28



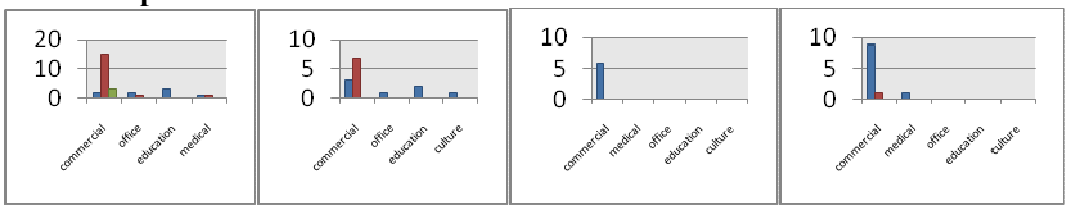
Yangji **Tancun** **Yuancun** **Keyunlu** **Liede**

Newly-developing areas ■before 2004/4/23■2004/4/23-2009/12/28■after 2009/12/28



Chebei South **Dongpu**

Areas to be developed ■before 2004/4/23■2004/4/23-2009/12/28■after 2009/12/28



Jiaokou **Tanwei** **Sanxi** **Yuzhu**

From the data and graphics, the quantity of the newly constructed public facilities of Zhujiang New Town district is huge. There seems to be a large number of commercial and financial businesses, education facilities and medical facilities. The quantity change of public facilities in the "city villages" district after the press conference of Metro Line Five's construction is different. The number of Yangji district increases as new commercial buildings being constructed after Yangji village's remove. The quantity of newly constructed public facilities nearby Tancun, Yuancun and Keyunlu between April 23th, 2004 and December 28th, 2009 occupies 82.86%,65.85% and 77.3% of the total quantity of public facilities.

The number of public facilities around Chebei South and Dongpu station in newly-developing district increased after the metro line's construction announcement and the number of the commercial real estate is growing fast. Also, the quantity of public facilities around Jiaokou and Tanwei station increased, showing that a few of commercial and financial facilities are constructed on the former agriculture land. The quantity of newly constructed public facilities around the two stations after April 23th, 2004 occupies 71.43% and 50% of the total quantity of public facilities. However, the number of public facilities around Sanxi and Yuzhu station which connect the city center and the center of Huangpu District doesn't change a lot.

Summary

In conclusion, the planning guide effect of Guangzhou Metro Line Five's construction to the existing central district of the city can be divided into two sectors. The quantity of public facilities in Guangzhou old city center didn't increase no matter when after the press conference of the metro line's construction or after the line started up, thus the planning guide effect of the construction is weak. The number of public facilities in "district center" has increased in some extent, thus there is some planning guide effect. The planning guide effect of Metro Line Five's construction to the non-existed central district of the city can be divided into four sectors. The effect to Zhujiang New Town district and the "city villages" is huge. The number of public facilities, especially the commercial and financial businesses grew up fast in these areas. The number of newly constructed public facilities in the "newly-developing district" increased a lot. For the western part of the "areas to be developed", the construction of the metro line has a big influence to the development of public facilities nearby. However, for the eastern part of the "areas to be developed", the planning guide effect of Metro Line Five's construction is weak. In a word:

1. The construction of Metro Line Five has a big influence to the perfection of public facilities in non-existed central district of the city. The number of public facilities especially the commercial and financial businesses in these areas increased obviously.

The quantity of public facilities in non-existed central district of the city had a huge growth in the second time slot when the metro line is announced to be constructed but not open to traffic.

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