

Active Travel Facilities in Zhuhai, China

CIVL 598P: Bike-Pedestrian
Facility Design
Assignment #2 - Location Selection
& Overview
Florence Zheng
2020-10-16

Overview

The two facilities selected for this assignment are located in the Wanzai Neighborhood of Zhuhai, a city located on the west bank of the Pearl River Estuary in Guangdong Province, China. The two locations are 300-meter away from each other. The first location is close to a major intersection in the community and is surrounded by local services and amenities. The second location is located along the river bank of Qianshan Waterway that separates the community from the city center district. The two sites are selected due to their distinct user groups and functions with the first located on the major road for local residents to commute to work and school and the latter works mainly for leisure and recreational purposes.

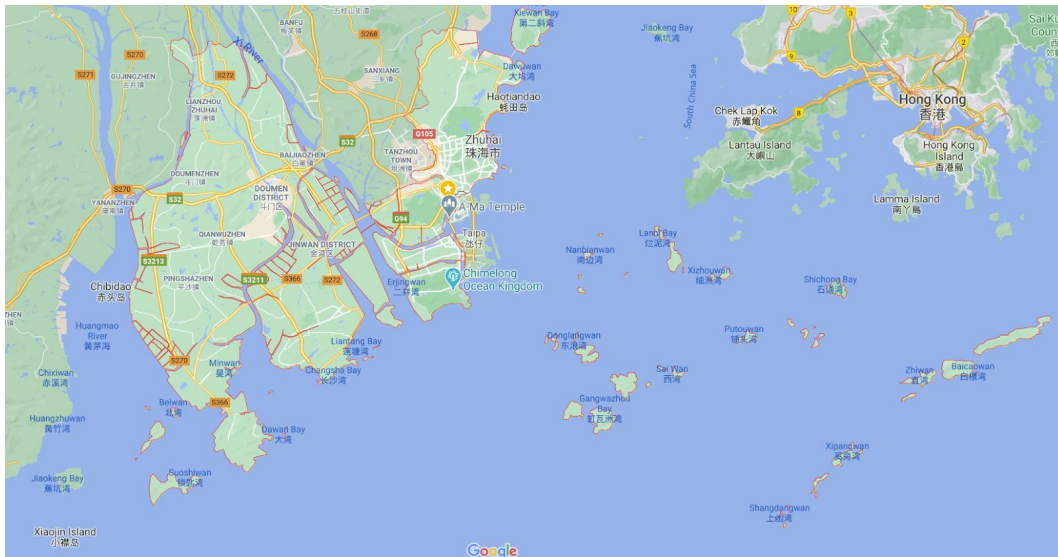


Figure 1. Area map of the City of Zhuhai, with yellow marker locating the neighborhood where observations were made (Google, n.d.a).

Site observations and active user counts for both sites were conducted on Friday, October 16 at 5PM and 5:30PM. The weather on the observation day was cloudy with the temperature of 27 °C. The user counts were calculated to determine the annual average daily traffic (AADT) of both sites.

Zhuhai City is located at the heart of Pearl River Delta and is connected by the recently-built Hong Kong-Zhuhai-Macau Bridge (HZMB) to Hong Kong and Macau Special Administrative Regions. With the prior branding as a southern tourist city, the recent growth of Zhuhai is pushed forward by the implementation of Guangdong-Hong Kong-Macau Greater Bay Area Development Plan. Major ways to commute include mass transportation by bus, private cars.

The Wanzai Neighborhood is an old neighborhood that is undergoing substantial development that is driven by the recent HZMB project. One of the connection lines to the HZMB starts right across from one of the facilities selected. The community is separated from the city core area by Qianshan Waterway. It is 6km away from the highly crowded Gongbei business district and 15km away from

the new Hengqin Economic District in the south. Major means to commute include driving, bicycle and motorcycle riding and via public transportation. The majority of the bicycle facilities were developed in the previous decade following the provincial guiding documents that initiated the development of the province-wide Greenway Cycling Trail.

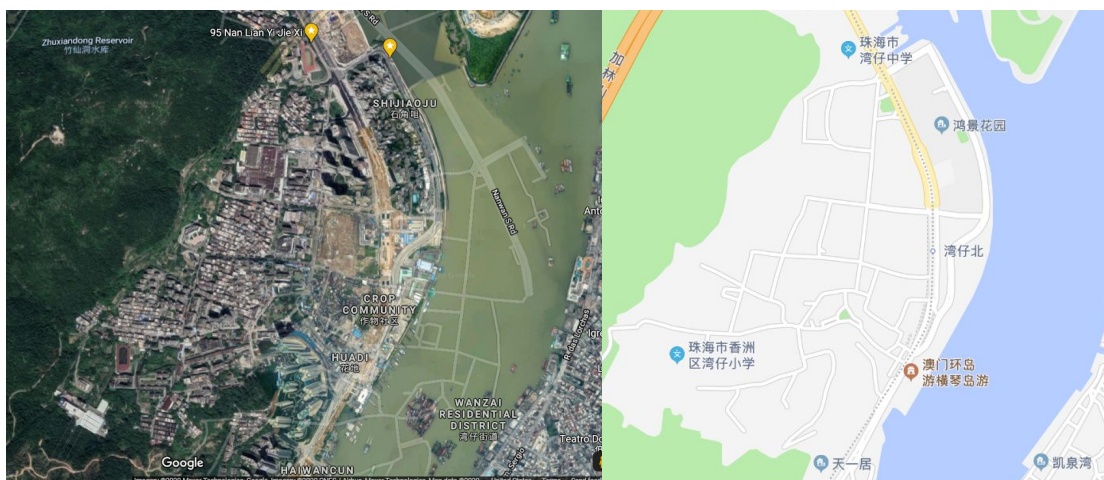


Figure 2. Satellite image and map of the Wanzai Neighborhood with yellow markers indicating the two facilities of observation (Google, n.d.b; AutoNavi, n.d.).

Nanwan Road South

Context

The Nanwan Road is an arterial road that connects the bridge over the Qianshan Waterway to the city center and the new Hengqin Economic District. The road has three lanes on each side with the east side of the road connected to the entrance ramp of one of the connection lines to the HZMB. Jialin Road, which crosses the Nanwan Road at the major intersection, will connect Yanhai Road on which the second facility is located. The Yanhai Road is blocked at the intersection due to construction. Pedestrians and bicycles now use the underground pedestrian passage to cross the Nanwan Road.

The surrounding area of this facility is not complex. Wanzai Middle School is located to the west on the lower hill of the Jialin Mountain. At the foot of the mountain lies a small community. Several high-rise condominiums are located on the east side of the street. Office buildings, the kindergarten and local businesses are situated within 500m of the site. A primary school is less than 700m away from the site located at the southern end of Nanwan Road South. The old business area of the neighborhood where the local cultural center and local market are located is within one kilometer southwest of the facility. It is connected to the major intersection by the Zhongsheng Road, the collector road that runs through the old neighborhood. Once an arterial road in the past few decades, the Zhongsheng Road, together with other local two-lane streets, form the road networks of this compact neighborhood dominated by low-rise residential buildings and street shops. Bicycles and motorcycles are usually popular in this type of traditional neighborhoods with a relatively small size and compact designs due to low maintenance cost and flexibility.

Observation

Located on a six-lane arterial road of the district, this specific location includes only one side of the road. The facility on the west side of Nanwan Road South consists of three automobile traffic lanes going south to the new Hengqin Economic District, a clear zone, a designated off-street bicycle lane and a sidewalk. The other side of the road has the same configuration with an extra entrance ramp to the HZMB connection line.

The sidewalk, which is right next to the wall of the high ground on the west, is made of bricks. A blind track is also built on the sidewalk. The south end of the sidewalk is leveled to a ramp that leads to the entrance of the middle school on Jialin Road. The bicycle lane is made of colored asphalt with the mark of a bicycle symbol. The width of the bicycle lane is around 3.7 meter. The clear zone is covered with grass. Unlike other major roads of the city, there is no tree planted in the clear zone. Street lamps for the sidewalk and the bicycle lane are built on the edge of the sidewalk, facing outbound to the bicycle lane. No parking facilities were observed around the facilities. Bicycles of bike-sharing services were spotted at the underground pedestrian passage.

When & who

Active traveller count was conducted on Friday, October 16 from 17:02 to 17:32 for 30 minutes. AADT of the sidewalk and bicycle lane is estimated based on the number of pedestrians, bicycles and motor assisted cycles passed through during the 30 minutes. The estimates are shown in Table 1.

The site was observed for 30 minutes during the peak hour of a weekday from 17:02 to 17:32. Pedestrians passed through the facility are mainly students of the local primary and middle schools and their parents and those travelling from work to home. Majority of the individuals that cycled past the facility were adults, while a few of them were middle school students. 30% of the cyclists were riding on bicycles loaned from the popular bike-sharing services. Motor assisted cycles spotted at the location include three-wheel mini trucks used by couriers, motorcycles and electric bicycles. With a width of 3.7 meter, the bicycle lanes were able to accommodate bicycles and motor assisted cycles even in the rush hours.

Pedestrians	645773
Bicycles	787843
Motor assisted cycles	1343207

Table 1. The estimated AADT at the west side of Nanshan Road South.

Why

This selected facility is built for local students and residents for commuting. It connects the core residential and business area of the Wanzai

Neighborhood, local schools, the small community located at the foot of the Jialin Mountain and the two bus stops nearby. The northern end of the facility is linked to Nanwan Road North and its nearby neighborhood and the bridge to the city core area.

Comments on the facility

The facility is built on one side of the Nanwan Road South, right next to the Wanzai Middle School on the high ground. With no street shops and large crowds nearby, the design of the facility is wide enough to accommodate local needs of pedestrians and cyclists. Lighting at the facility is sufficient that it ensures a safe environment for walking and cycling after dusk.

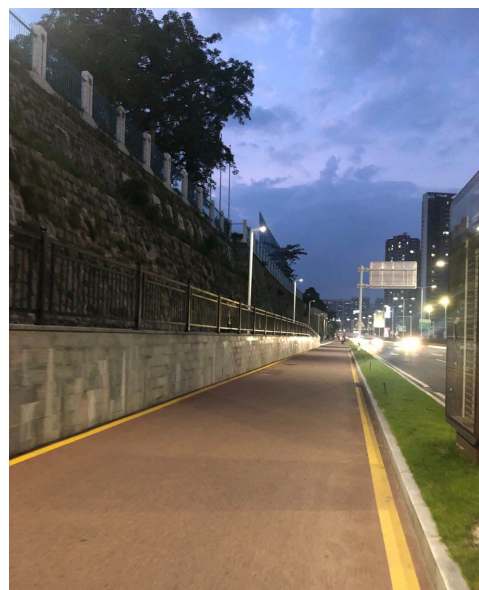


Figure 3. Bicycle facility at Nanwan Road South.

A direction marking is not painted on the bicycle lanes and cyclists did not seem to follow the direction of the automobiles on the same side. Given the width of the lane and the volume of traffic, the lane should be redesigned to be bidirectional to avoid accidents. Markings and signages should also be added to guide the pedestrians and cyclists. Unidirectional design for both sides of the road is not recommended because the only to cross the six-lane road is through the underground pedestrian passage located at the intersection, and most local services and residential buildings are found on the westside of Nanwan Road.

Yanhai Road

Context

Yanhai Road is 300-meter away from the first facility, built along the riverside of Qianshan River. The city has planned to connect this road with the famous Lover Avenue and the East Hengqin Ring Road to extend the provincial Greenway Line One. The Greenway Cycle Trail is a provincial bicycle lane development project that aims to build bicycle lane networks across 21 municipalities in the province. The Lover Avenue section of the Greenway Line ONE has completed and the route connecting the Lover Avenue and Yanhai Road is currently under construction. The eastside of the road is the waterfront where people can view the cityscapes of Macau Special Administrative Region, a resort city famous for its gambling industry. The other side of the road is a community with mid-rise residential buildings. A couple of street shops could be found on the first floor of these buildings. There is one primary school and one kindergarten in the community.



Figure 4. Bicycle facility at Yanhai Road.

Observation

There are three eastbound automobile traffic lanes, two westbound automobile traffic lanes, one bicycle lane on the east side, a clear zone with vegetation on both sides and a sidewalk. Private car parking is located between the sidewalk and the residential building. Trees are planted only on the westbound clear zone. Street lamps that are built on the bicycle lane provide sufficient lighting for night time walking and cycling activities. Bicycle marking is painted on the lane.

The bicycle lane is made of the same material of asphalt with a width of around 1.8 meters. The lane is terminated at the intersection where Yanhai Road and Jialin Road intersect. A marked crossing is observed at this intersection, but no traffic light for pedestrians and bicycles is spotted.

When & who

Active traveller count was conducted on Friday, October 16 from 17:19 to 18:09 after traveller count at the first site for 30 minutes. AADT of the sidewalk and bicycle lane is estimated based on the number of pedestrians, bicycles and motor assisted cycles passed through during the 30 minutes. The estimates are shown in Table 2.

Pedestrians	361633
Bicycles	0
Motor assisted cycles	0

Table 2. The estimated AADT at the east side of Yanhai Road.

There were no cyclists observed during the 30 minutes of observation. All pedestrians that passed by were students from the nearby schools.

Why

Built right by the waterfront, the facility is designed to be integrated into the provincial Greenway Line One for the purpose of leisure and recreation pursuit. However, the routes to connect Yanhai Road and the completed lanes on Lover Avenue are under construction. Tourists starting their trips from Lover Avenue are not able to get to this facility by cycling. No large amenities located around this facility.

Comments on the facility

A sidewalk should be added to this facility. Even though there were no users other than pedestrians observed during the traveller count, this facility will not be able to accommodate both cyclists and pedestrians when the lane is integrated into the provincial Greenway. Signals could also be added at the intersection.

Google. (n.d.a). Zhuhai. Retrieved from <https://www.google.com/maps/place/Zhuhai,+Guangdong+Province,+China/@22.1612156,113.1117569,10z/data=!3m1!1e4!3m4!1s0x34016885669eafb5:0xdf31e2523aeac604!8m2!3d22.270978!4d113.576677>
 Google. (n.d.b). Zhuhai. Retrieved from <https://www.google.com/maps/@22.1964592,113.5253888,3188m/data=!3m1!1e3>
 AutoNavi. (n.d.). Wanzai. Retrieved from <https://www.amap.com/search?query=%E6%B9%BE%E4%BB%94&city=440400&geoobj=113.49711%7C22.17175%7C113.574093%7C22.209011&zoom=14.24>