Repositioning Guangzhou

By Jeffrey Heller

Guangzhou, China, is serving as the host city for the 2010 Asian Games, but its existing downtown plan neither met the city's immediate needs to accommodate the event nor significantly addressed its larger-scale urban challenges.

Photo: Heller Manus Architects

Explosive industrial and urban growth has helped make Guangzhou the third-largest city in China, with more than 10 million residents in the metropolitan area. Located 75 miles (120 km) northwest of Hong Kong, Guangzhou is the main political, commercial, and industrial center for the Pearl River Delta, providing a vast array of textiles, steel, paper, chemical products, electronics, and consumer goods to Asia and the world.

This rapid growth has come at a price for people living and working in the central city. Neighborhoods and open space have been destroyed for commercial development and often indiscriminate road building. Traffic comes to a standstill in many parts of downtown during peak hours. Guangzhou's air quality has deteriorated dramatically over the past two decades, and sustainability has played little part in the city's urban planning.

A year ago, Mayor Zhang Guangning recognized that the city's formal plans for downtown did not address fundamental concerns about sustainability and quality of life. With Guangzhou serving as the host city for the international Asian Games next fall, the existing downtown plan neither met the city's immediate needs to accommodate the event nor significantly addressed its larger-scale urban challenges. The mayor sought ideas to help the city put its best foot forward in the short term and help make it a more desirable place to live and work in the long term. A new master plan will act as both a physical plan for the new downtown and an educational document to guide public officials as they make development and planning decisions in the years ahead.

The north axis area of downtown Guangzhou is a 1,450-acre (588-ha) area running from the city's major East Railway

Photos: Jeffrey Heller

Encouraging pedestrian activity is a fundamental principle of the new master plan for downtown Guangzhou (top left). The main train station arrival area is covered by a featureless, heat-trapping, unusable plaza that creates a dark and claustrophobic arrival experience (top right). Formidable highway and rail rights-of-way divide the city near the main train station (far left). Pedestrian barriers in Guangzhou divide neighborhoods and disrupt the city pattern; people defy the barriers as a normal practice (left).

train station southward to the Pearl River. The area includes the Tien Ha Sports Center, the central focus for the 2010 Asian Games, plus two major high-rise development areas, several large residential neighborhoods, a major retail complex, and several large parks. A subway line runs beneath the north axis area, as will two proposed new subway corridors.

The four primary goals behind the master plan include encouraging pedestrian activity and transit use, reconnecting to nature, enhancing public facilities downtown, and providing a comprehensive overlay of sustainable practices to guide future development.

Pedestrian and Transit Connectivity

Over the past two decades, automobile traffic in Guangzhou has increased exponentially. Until recently, the response has been to focus on road construction and preventing activities that might interfere with the flow of cars. Bicycles and motorcycles are prohibited in many parts of downtown, and barriers have been installed to prevent pedestrians from crossing the street at grade level on many major roads. While occasional underpasses and overpasses have been provided for pedestrians, these bridges and passageways are uninviting.

Major areas of downtown are accessible, realistically, only by car. Yang Ling Park at the north end of the north axis area, for example, is cut off from the new downtown by a large highway and railroad tracks, though a pay-for-use pedestrian tunnel is buried beneath the park's surface. Concrete barriers effectively prevent pedestrian access to the sports complex from a major retail center.

Even with these extreme automobile-

Photo: Heller Manus Architects

The new master plan for Guangzhou, the third-largest city in China, addresses concerns about sustainability and the quality of life. The plan calls for creation of new walking and biking paths and a greenbelt around downtown.

oriented policies, traffic has gotten worse. The public is unhappy: residents and workers often avoiding the substandard tunnels, climbing over pedestrian barriers and scurrying across heavily congested traffic lanes.

Guangzhou's transportation plan likewise has failed to maximize transit use in the dense urban core. The main downtown train station provides a dark, grim entry and exit to the city for hundreds of thousands of people. The design of existing subway entryways and pedestrian underpasses is similarly uninviting. The new urban design program improves all of those conditions.

A top priority of the revised north axis master plan has been to improve the pedestrian experience and encourage use of alternative transportation. The plan calls for new grade-level pedestrian crossings, improvements to or elimination of the existing above- and below-grade pedestrian tunnels, and creation of new walking and biking paths in parts of downtown and a greenbelt around downtown. There will be lanes designated for a new bus rapid-transit (BRT) system, and major improvements are planned for the existing train station and existing and proposed subway stations. A cable-stay suspension bridge for pedestrians is to be built to provide better connectivity between Yang Ling Park and its residential neighborhoods, and to commercial areas and sports and public transit facilities.

Connecting with Nature

Runaway roadway expansion, the development of vast paved plazas and parking lots, and the loss of natural open space have contributed significantly to Guangzhou's deteriorated urban experience. The new plan calls for a major makeover that involves ripping out existing plazas and paved surfaces, and providing new trees and landscaping throughout the downtown area. Water features are to be reintroduced downtown with new fountains and waterways that will help connect and unify the master plan area and reflect Guangzhou's cultural ties to the Pearl River. The new pedestrian sky bridge to Yang Ling Park at the north end of the axis is expected to help reconnect this natural area to the fabric of downtown. The two-tower, S-shaped bridge will be about 985 feet (300 m) long and soar over the highway and railroad obstructions that now isolate the park area.

Investing in Public Facilities

The upcoming Asian Games and the new master plan create new opportunities

Photo: Heller Manus Architects

The entire surface of the Tien Ha Sports Center, the focus of the 2010 Asian Games, will become a composition of landscape and plazas with walking paths, shade trees, seating, and water features.

for investment in Guangzhou's public infrastructure.

At Guangzhou's East Railway train station, which lies across from Yang Ling Park, the arrival area is currently buried beneath a large concrete plaza, making the station appear ominous and uninviting. The new plan calls for demolition of a substantial portion of the plaza and installation of a glass canopy, which is expected to invite transit use.

South of the train station, buildings that make up the Tien Ha Sports Center are cut off from each other by a sea of asphalt, random parking lots, and congested roads. The major public plaza is a sea of barren hardscape providing no public amenities. The master plan will eliminate much of the parking and place the remaining parking underground. The entire surface of the Sports Center is to become a composition of landscape and plazas employing green and sustainable components. Walking paths, shade trees, seating, water features, and other amenities are intended make the area attractive for Asian Games visitors.

The new plan calls for several substantial changes to Tien Ha Road on the south edge of the sports center. A portion of the road will become a thoroughfare without intervening streets or driveways, and the roadway will be placed below grade as it runs between the Sports Center and the downtown's major retail complex. To allow pedestrian access between the sports complex and the retail area, the central plaza at Tien Ha Sports Center will be extended over this below-grade portion of the road.

Also, a new main terminal for the BRT system will be constructed as part of the roadway and plaza design. Buses will arrive on dedicated lanes at the BRT station on the lower level, which will be linked to the main plaza overhead with escalators. The terminal will be open to the sky with a large glass canopy sheltering it. Elevators and escalators will also connect to retail shops beneath Tien Ha Plaza and to the existing lower levels of the retail complex at Hong Cheng Plaza on the south side of Tien Ha Road.

Sustainable Practices

As is the case in many Chinese cities, Guangzhou's urban growth has dramatically affected its own climate. The abundance of roadways, concrete plazas, and parking lots, as well as the loss of open space, has created a heat island in downtown Guangzhou, with ambient temperatures significantly increased through heat reflection and re-radiation. By ripping out existing plazas and paved surfaces and replacing hardscaping with landscaping, Guangzhou can reduce this heat-island effect, resulting in improved livability and sustainability of the downtown.

In a typical modern city, transportation is responsible for about 40 percent of total energy consumed, with private automobile use accounting for much of this energy demand, as well as the resulting air pollution. Guangzhou's planned pedestrian and public transit improvements are aimed at reversing the current trend of increasing auto use. In addition, the creation of bike paths through the greenbelts will help reintroduce the previously ubiquitous bicycle into the downtown area as a healthy, fuel-free alternative.

Another 40 percent of the energy required in a modern city is consumed by buildings. The new plan calls for all new buildings to obtain Leadership in Energy and Environmental Design (LEED) certification through the U.S. Green Building Council and employ the best energy conservation strategies in their design and operation. On-site alternative energy generation is being encouraged to reduce dependence on coal and other fossil

fuels and to get buildings to net-zero energy use. This approach will be showcased in the integrated photovoltaic glass canopies for the train station and the new BRT station. New street lighting will also include photovoltaic panels to reduce landscape lighting power needs.

Transporting water from distant sources accounts for a large portion of energy consumption at the provincial and national level. Also, diversion of water to cities from poor rural areas has negative social impacts on impoverished rural residents and reduces food production for cities. Master plan strategies to conserve water resources include use of native plants, low-water consumption landscaping, and water-conserving plumbing fixtures in downtown buildings. Other strategies, such as capturing rainwater in parks, in open spaces, and from buildings for landscaping and nonpotable indoor uses, will not only conserve water, but also reduce stormwater runoff that pollutes rivers and causes them to flood during peak storms.

Rapid consumption and depletion of raw materials is a major problem in rapidly growing regions. The manufacturing and transportation of new materials is also a large consumer of energy and generator of greenhouse gases. The master plan retains many structures initially considered for demolition, such as the train station, the sports complex, and the 6-Yun neighborhood. The plan also enhances them by adding green spaces and retail functions to make the areas around them more people friendly. Retention of existing buildings will save on rebuilding costs; where new buildings and landscape are constructed, locally sourced materials with as much recycled content as possible will be used to reduce energy used for transportation and manufacturing. Buildings will use materials with low off-gassing levels and will be designed to maximize daylighting and views for a healthy indoor environment.

The new plan for Guangzhou demonstrates the capability of major cities to address fundamental urban challenges. By preserving urban resources, investing in new infrastructure, and establishing higher benchmarks for future development, Guangzhou now has a strong plan to meet both immediate needs and long-term goals for urban success.

Photo: Heller Manus Architects

At Guangzhou's East Railway train station, the new plan calls for installation of a photovoltaic glass canopy. New street lighting will also include photovoltaic panels to reduce electricity demand for landscape lighting.

Jeffrey Heller is president of San Francisco–based Heller Manus Architects and director of the firm's practice in China; the firm developed Guangzhou's new master plan.

Photo: Heller Manus Architects

The master plan adds public spaces and retail functions to make the areas around the planned structures more people friendly.