

Chapter 10

Public Infrastructure

Public infrastructure was inspired by the need to facilitate better urban development. In 2011, the Taipei City Government continued to promote its road smoothing project, and to thoroughly improve road quality through the “road foundation improvement” project; in addition, the government successfully constructed and maintained a robust storm sewer, flood prevention and wastewater sewerage system to protect residents from the ravages of floods, while reinvigorating the city’s river systems to create a water-friendly living space. The construction of tree-lined parkways, and themed flower expositions attracted much attention from more than a million residents; furthermore, the Taipei City Government also actively promotes the service quality of public utilities and public housing projects. The Taipei City Government is committed to creating a resident-friendly living space, and defining the cityscape with sustainability-first goals.

Chapter 10

With “teamwork, cooperation, outreach, and goal orientation” as the core values of its construction promotion, the Taipei City Government actively puts various projects into motion on a already-solid foundation; the city government fashions a new look for Taipei's cityscape with public infrastructure as the framework and urban greening as its mission.

PART 1 Thoughtfully-planned Transportation Construction Projects

In response to demands stemming from urban planning, the Taipei City Government develops expressways, builds and renovates urban roadways and bridges, while effectively improving roadway service quality to mitigate heavy traffic in downtown areas.

1. Improving Road Quality

Excluding road islands, sidewalks, and MRT construction sites, the actual asphalt concrete paved roadways total 15 million square meters; it is projected that surface renovation on Taipei's major roadways will be completed within a six-year period (from 2009 to 2014). In 2011, 1,015,000 square meters of road fortification were completed as part of the road smoothing project. Also, 4,249 manholes have been lowered to ensure that the city's roadway surface is more level, so pedestrians and drivers can travel safely and comfortably.

2. Convenient Roadway Development



Construction for the road smoothing project (section 7 on Zhongshan North Road).

The City's railway underground eastward extension construction to Nangang is measured at 5.4 kilometers. The project began on November 1, 1998, and was completed in October, 2011 to open to transport service. The project has successfully removed the current blockage obstructing the northern and southern stretches of the railway, improved local traffic flow, enhanced urban renewal on the northern and southern sides of the railway, facilitated land development, upgraded the landscape along the rail line, and boosted the locals' lifestyle quality.

3. Smooth Pedestrian Space

The Taipei City Government is committed to promoting the improvement and renovation of all the sidewalks in the city, and its efforts have been recognized by the Construction and Planning Agency under the Ministry of the Interior with the First Place award in the “2011 Friendly City Awards for Pedestrian Space – Urban Cities.” The Ministry of the interior Taipei City Government has designated the primary and secondary roadways as priority improvement areas, to complement other projects that target gentrification, road improvement assignments for parks, public agencies and schools, to be in keeping with Taipei's urban space improvement scheme.

Taipei City's sidewalks cover about 2.5 million square meters. By 2011, 2,103,800 square meters of space were revamped, accounting for 84.15% of the total sidewalk area in Taipei City. On average, 50,000 square meters of sidewalk space



Roads are repaved as part of the underground railway project (Civil Boulevard, section B).



The graceful, charming Guting bike lane.

is being renovated annually. All the sidewalks will be renovated by 2019.

4. Bridge Safety and Maintenance

At present there are 190 beam bridges, 34 river-crossing bridges, 31 vehicle flyovers, 89 pedestrian overpasses, 12 tunnels, 12 vehicle underpasses and 55 underground walkways, totaling 423 bridges in Taipei City.

(1) Painting Steel Bridges

The steel structure from Cheng Gong Bridge, Taiwan 5 Highway, to MacArthur 1st Bridge that stretches over the viaduct on Huan Dong Boulevard was painted. The steel structure was reinforced with a resistance buttress to slow down environmentally-caused erosion on the structure. These measures aimed at ensuring the safety and enhancing the looks of the bridge.

(2) Bridge Inspection, Maintenance and Reinforcement

Inspections were conducted on a total of 258 bridges in 2011. Shock resistance components of the bridge and flood control mechanisms of the bridges were checked. For bridges that raise safety concerns during visual assessment, a detailed follow-up inspection and evaluation will be conducted. For bridges that require improvement after inspections, budgets are earmarked to facilitate necessary reinforcement to ensure traveling safety.

(3) Beautifying Flyovers

Maintenance work and beautification constructions were completed on Nanhu

Elementary School, Minghu Elementary School, the Taipei World Trade Center, Huaisheng Elementary School, and five pedestrian flyover walkways by Roosevelt Boulevard and Xinglong Road. The beautification and improvement assignments help to provide residents a safe, brightly-lit and clean traveling space.

5. Common Duct Construction Projects

The construction of common ducts helps free residents from enduring the inconvenience caused by road excavation and duct burying projects; it also minimizes traffic accidents caused by road excavation, improves the smooth flow of traffic and encourages versatile road and land uses. The Taipei City Government has completed the construction of the following common ducts according to "the Common Duct Act." To date, Route Civic Boulevard, Route New Community (Keelung River Bend straightened area), Route Zhumei and the Nangang Economic and Trade Park common duct constructions have been completed and are in full operation. Common duct construction projects slated for 2011 included: the MRT Xinyi Line common duct and the MRT Songshan Line common duct as part of the MRT network. Constructions that have been completed but are not yet in operation are: Route Dadu common duct, and common duct construction for railway underground extension eastward to Nangang. Common duct construction on the Fuguo Road extension line is being designed.

PART 2 A Committed River Dredging and Management Effort

1. Flood Control and Drainage Construction Projects

(1) Establishing a Comprehensive Water Control Mechanism in Taipei City

The Taipei City Comprehensive Water Control Management Commission was inaugurated in 2006, with the objective of launching a new water management mechanism for “retaining upstream water resources, reducing midstream flood risks, and preventing downstream flooding,” by integrating support from the government and private sectors to create a safe, cozy, pleasant and healthy eco-metropolis. Periodic conventions were held in 2011 to formulate six quantified, integrated flood control objectives, to enhance flood prevention programs and develop an effective flood control initiative, and to create a comprehensive, robust damage-control structure for promoting a full-scale flood control system.

(2) Tamsui River Basin Management Committee Established

To show forth the strong resolve of Taipei City – New Taipei City to jointly dredge and revive the Tamsui River, Taipei Mayor Hau Lung-bin and New Taipei City Mayor Chu Li-lun co-hosted the inauguration tea party of the “Tamsui River Basin Management Committee” on August 10, 2011. The two municipalities will strengthen the coordination of Tamsui River basin management and pollution prevention programs.



Inauguration tea party of the “Tamsui River Basin Management Committee.”

(3) Organizing a “Taipei Flood Control Management and Onsite Inspection” for the 2011 Asia Pacific Economic Cooperation Typhoon Symposium

On April 13, 2011, Taipei Deputy Mayor Chen Wei-zen welcomed a delegation of foreign guests from APEC to give a presentation in English and an onsite tour to inspect Taipei City Government's disaster prevention system and flood control mechanism.

(4) Hosting the 3rd Summit of World Zero Meter Cities for Solutions to Combat Climate Change

On December 1, 2011, the Hydraulic Engineering Office under the Public Works Department of Taipei City Government hosted the 3rd Summit of World Zero Meter Cities. The summit was graced by experts from China, Japan, South Korea, Italy, Australia, Indonesia, Maldives, the Netherlands, and officials from Taiwan's five municipalities. Academicians and specialists gathered in one forum to discuss strategies to battle climate change and flood prevention. The rare occasion marked a special milestone in Taiwan's hydraulics history.

(5) Flood Control Engineering in Taipei

In keeping with “Flood Control Engineering in Taipei” by the Ministry of Economic Affairs, Taipei City's overall flood control program is primarily



A photo of featuring the guests at the 3rd Summit of World Zero Meter Cities.

characterized by embankment construction along rivers, complemented by watercourse dredging and river management. The city's embankment construction in the planning is measured at 131,231 meters in length. By 2011, 109,141 meters of construction had been completed among which, approximately 1,500 meters of Zhoumei embankment along the Keelung River await construction. The project will complement the "Beitou/Shilin Technology Park Development Project" for completion by the end of year 2015. Approximately 5,268 meters along the Guandu embankment await construction – the project will be carried out along with the Central Government's approval of the Shezi Island Development Project. Also, about 7,210 meters of embankment between Shuangxi's Fuxing Bridge and Jiannan Bridge require flood control enforcement. Finally, a budget has been earmarked for a 500-meter flood control embankment between Wanfang Interchange and the MRT Muzha Line. The construction is underway.

(6) Storm Sewer Construction Projects

The total length of the City's storm sewer construction, including main and branch drainage lines, is 540 kilometers long. By 2011, 522.158 kilometers had been completed; the completion rate was estimated at 96.70%. In the same year, ten construction projects, including "manhole constructions along the Sanzhangli interception ditch (the stretch between the railway and the embankment)" were conducted to significantly ameliorate Taipei's cityscape and bolster its drainage functions.

To reinforce water-level monitoring stations at the storm sewer network, Taipei City completed installations of 157 water-level monitoring stations, two discharge gauge stations and five closed-circuit television stations for data monitoring and analysis in 2011 to effectively monitor water levels.

(7) Pumping Stations Management

There are a total of 64 permanent pumping stations and 21 provisional pumping stations

operating in Taipei City. Altogether, 402 sets of water pumps are installed around the city, totaling 2,093 cubic meters per second in pumping capacity. To reinforce flood control and drainage, and increase pumping capacity, construction (expansion) projects continued for Zhoumei, Wenlin, and Changchun Pumping Stations in 2011. Also, the Public Works Department of Taipei City Government renovated Guting, Donghua, Zhongshan, Beixian, Zhishan, Fude and Jingzhou water pumping sets, while conducting noise control tests at the pumping stations. Additionally, to reinforce flood control and emergency response capabilities, the Hydraulic Engineering Office of the Public Works Department hosted flood control exercises on April 18 and 19, 2011, mobilizing a crew of 247 people to conduct simulated drills on the operation of pumping stations, the closing of evacuation gates, mobilization efficiency tests, emergency repair on the embankment gap, and the actual exercise and drills to test the 12-inch and 4-inch mobile water pumps.

2. Revitalizing Taipei's Watershed Areas

(1) Wastewater Sewerage Construction Projects

Pipeline construction improvements for wastewater sewerage systems continued throughout the city construction completion ratios of sewage system's primary main pipes, secondary main pipes, and the branch pipeline network were 100%, 96.79% and 84.73%, respectively. A total of 731,146 households in Taipei City have wastewater sewerage

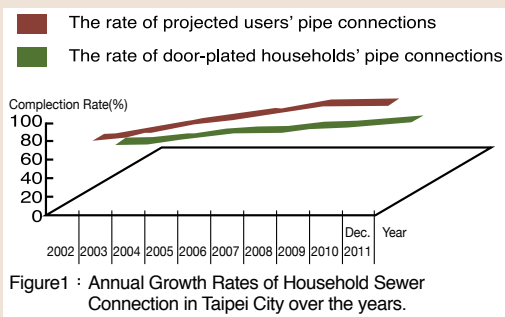


Figure 1 : Annual Growth Rates of Household Sewer Connection in Taipei City over the years.

connections; pipe connection rates of door-plated households reached 67.94%, the population-served pipe connection rates have reached 100%, as illustrated in Figure 1. In 2011, pipe connections were completed in 31,240 door-plated households, registering a 2.44% growth rate, compared to 65.5% registered over year-end 2010.

Government organizations, schools and the top-100 tap-water users in Taipei City are slated to receive priority pipe connection services. In 2011, 41 units from the City's government organizations, public markets, public and private schools and other heavy users received connection services. Services will continue for government agencies and MRT stations across the city.

(2) Interception Stations : Development and Operating Status

There are a total of 35 wastewater interception stations that dot across the Tamsui River basin. Among these, 12 are located in Taipei City, 22 in New Taipei City, and one in Keelung City – all are in active service. One interception station in New Taipei City is currently being inspected before official operation. All 35 of these interception stations have been commissioned to Taipei City for operation and management. By year-end 2011, all interception stations had the capacity to reach 586,000 CMD of processing output, effectively intercepting wastewater in Qingtian interception station, and discharging the wastewater after it is processed at treatment plants.

(3) The Construction of On-site Treatment Facilities and Operation Status

Taipei City has installed two aerated gravel contact oxidation processing facilities in Nanhu and Chengmei. Starting in 2010, two other such facilities were set up in Zhongxiao and Guiyang to effectively improve the water quality of the Tamsui River. The construction of an aerated gravel contact oxidation processing facility in Guiyang was completed in 2011 and is now in operation. The one in Zhongxiao is currently being constructed.



An encounter with Mosaic assemblage in a back alley.

(4) Back Alley Beautification

For households in areas that underwent user pipe connection constructions and repairs, back alleys wider than two meters were given a facelift. 228 back alleys were given a facelift in 2011; to date, 689 back alleys have been beautified.

(5) Reinforcing the Wastewater Sewerage System

The Taipei City Government continues its consistent management of the Neihu wastewater treatment plant, the Dihua wastewater treatment plant, and the Bali wastewater treatment plant – currently under Taipei City's jurisdiction. The total 1.97-million CMD wastewater treatment capacity is deployed and managed in a matter that optimizes interception. By yearend 2010, LongXing second sewerage piping engineering was completed to put in charge of wastewater transport during the period when LongXing Sewerage undergoes its annual maintenance. The arrangement improves the operational



A panoramic view of the Guiyang aerated gravel contact oxidation processing facility.

stability of the wastewater sewage system in the Tamsui River to lower risk.

The interception stations, water pumping sites and pumping stations scattered around the sewage system are used as relief pumping sites; the existing machineries drain the excess water to the rainwater sewage system, so that the overflow of rainwater during flash floods and the typhoon season will not enter the system to cause overload. By 2011, 14 emergency relief pumping sites were completed in 2011 in Taipei City's wastewater sewage system.

3. Creating More Waterfront Spaces

(1) The Greening of Riverside Parks

The Hydraulic Engineering Office under the Public Works Department, Taipei City Government carefully constructed 29 riverside parks that dot across the Taipei river system, attracting residents to enjoy outdoor and leisure activities.



The beautiful patterns in Guting Riverside Park.

(2) Beautifying the Face of River Embankments

The Hydraulic Engineering Office under the Public Works Department worked with communities in Taipei to beautify the face of embankments along Xinhai Road, section 7. The vibrant colors of the murals fully demonstrated the unique character of each community and are very popular with the residents. On June 19, 2011, the “My Home by the Beautiful Riverbank – Environmental Beautification Projects for Riverbank Communities in Taipei

City – Event Conclusion Ceremony,” was hosted, where plaques, gift coupons and certificates of appreciation were awarded. City councilors, borough chiefs, representatives of schools and residents were invited to the fair to participate in the event.



The enchanting murals on the face of the Jingmei River embankment.

(3) The Construction of Bike Lanes by Riverside Parks

The Hydraulic Engineering Office under the Public Works Department completed the construction of connecting the bike lanes along the front of Shih Hsin University in March, 2011. Taipei's riverside bikeways were measured at 111 kilometers in total length by 2011. Six distinct riverside bikeways are in the planning according to the Tamsui River, Keelung River and Hsintien River's variety of riverscapes and local features, so that residents can enjoy biking while feasting on the pleasant riverscapes.



Connecting the bike lanes by Shih Hsin University.

PART 3 The Pleasant Cityscape

1. Increasing the Park and Green Area Per Capita

Presently in Taipei's urban planning, a total of 1,063 lots of land (including riverside parks and 39 other sites) - covering 1,983 hectares - have been reserved for parks, greening areas, plazas, and children's playgrounds. By 2011, 836 parks (including some 43 partially constructed parks) and green areas have been developed, totaling 1,366 hectares, equaling 5.217 square meters of green area coverage accessible to Taipei residents per capita. (Table 1 shows the green area coverage per capital from 2002 to 2011)

2. Park Construction (Expansions)

To provide residents with a quality living space, park construction and expansion projects were underway in line with Taipei City Government's ongoing policies, to ensure that park areas are equally allocated and accessible to residents in the urban and suburban regions. Key construction projects over the course of 2011 included: the newly constructed Gelaubie Park in Beitou, environmental renovation engineering in Dahu Park, and the expansion of Wenshan (Jingmei) No. 21 Xintai Park. Restroom improvement projects were underway as well simultaneously to provide visitors a clean, comfortable visit and enhance the overall park service quality.

3. Road Greening and Beautification

(1) Greening Embellishments for Streets and Roadways throughout the City

Roadway embellishments were conducted on key areas, such as trunk roads in the cities,



Dahu Park.

incoming and outgoing pathways connecting the neighboring cities and counties, traffic circles, traffic islands and green areas. Shrubs were planted to complement the arrangements of colorful potted flowers, and bonsai plants in these designated regions in geometric and stylish patterns in gradational layers, to create different visual effects for roadways. Also, the Taipei City Government worked in keeping with the unique environmental makeup and plant features, using ground cover plants, perennial plants, flowering shrubs, long-lasting herbaceous flowers and lawns to replace flowering plants to cut costs. In 2011, NT\$120 million was earmarked to improve



The winding roadscape on Jiantan Road.

Table 1: The green area coverage per capital from 2002 to 2011.

| Year | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 |
|---|------|------|------|------|------|------|------|------|------|------|
| Green Area Coverage per capita (square meters / per capita) | 4.82 | 4.86 | 4.95 | 5.01 | 5.03 | 5.11 | 5.16 | 5.18 | 5.17 | 5.22 |

road greening and expand green areas. 117,310 square meters of land were contracted to private construction companies and agencies under the Taipei City Government.

Also, street trees have been planted along the city's sidewalks wider than 2.5 meters; special attention was paid to planting trees in empty tree holes and renewing tree species to enhance the effects of roadside greening. In 2011, the new plant additions (replacements) totaled 820 street trees, 244,402 shrubs, 4,455 square meters of lawns and 52,639 ground cover flowering plants.

(2) Promoting the Construction of Shaded Boulevards

In 2011, the Taipei City Government launched the construction of shaded boulevards. Trees were generously planted along Yanjiuyuan Road, Zhongshe Road, areas surrounding the Nangang Exhibition Hall, Jianguo South and North Roads, Tiding Boulevard, and Xinlong Road. The construction will continue until 2014 and is projected to create 35 shaded boulevards in urban Taipei within four years. Trees, bushes, flowering plants and grasses will be liberally grown to enhance urban greening, improve air quality, and lower the hot island effect to offer residents a more pleasant green city.



Shaded Boulevard – Renai Road.

(3) Adoption Programs

The Taipei City Government encourages private organizations and individuals to adopt

green areas, plazas, traffic islands, roadside trees, and parks over one hectare. 315 such areas were adopted in 2011, totaling 319,936 square meters. In addition to lightening the manpower and funding burden on the government, the program also inspires creativity and innovation to enrich a vibrant cityscape.

4. Flower Exhibitions

(1) Camellia Exposition

“The 2011 Taipei Camellia Exposition – the Millennial Gathering” was held from January 14 through the 23, at the Yangmingshan Flower Experimentation Center, attracting approximately 30,000 visitors. The exposition featured hundreds of locally grown camellias and tea cherry blossoms. Visitors were able to find many enchanting camellia bonsais provided by camellia aficionados from around Taiwan in the indoor exposition area.



Camellias in full bloom in the garden.

(2) Yangmingshan Flower Festival

“The 2011 Yangmingshan Flower Festival – the Springtime Dance of Hope” was held from February 18 through March 20. In addition to the beautiful cherry blossoms, the Taipei City Government invited middle school and primary school students in the neighborhood to jointly create a large eco-friendly environmental art installation that symbolized hope, in order to raise awareness among the public about the

importance of safeguarding our environment. The art installation served as a concrete symbol of our love for the planet and our hope for the future.

(3) The Chrysanthemum Exposition at the Shilin Presidential Residence

The 2011 Chrysanthemum Exposition at the Shilin Presidential Residence – “the Dialog between Chrysanthemums and Poetry” was held between November 19 and December 4, 2011, to highlight the history and culture that spanned the past ten years since the Chrysanthemum Exposition was first held. The exposition was held simultaneously in the Yuan Shan Park of the Flora Expo site, and the Shilin Presidential Residence.



Chrysanthemum Exposition – a landscaped arch bridge.

(4) The Taipei Flower Exposition

The exposition was held in Youth Park for the first time ever and was inspired by the world literature classic, the Bluebird of Happiness. Landscaping of the exposition was professionally done to piece together the adventure of the youths in search of the bluebird. The exposition was held between December 10, 2011, and January 30, 2012, guiding visitors to search for the bluebird that is called “Happiness,” and raise awareness among the public that happiness is right around the corner. Other than the various floral landscape designs, the Flower Clock in Youth Park was

repaired and is now working again; residents can once again revisit the beautiful memories that the Flower Clock brought them in the golden days. The Flower Clock in Youth Park is a brand-new addition to the one on Yangmingshan and serves as an eye-catching landmark for Youth Park.

5. Streetlamp Construction and Maintenance

(1) Streetlamp Construction across the City

To complement the newly constructed parks, roads and expansion projects, in 2011, 2,237 new streetlamps were installed; by yearend 2011, Taipei City had a total of 148,213 streetlamps. The Taipei City Government hopes to lower the streetlamp breakdown ratio down to 1.5, and has reinforced routine patrols and repairs.

(2) Nighttime Illumination Improvement for Lanes and Alleys around Schools

To prevent the areas surrounding schools from becoming a fertile ground for crime at nighttime, the Taipei City Government reinforced illumination facilities in areas surrounding Taipei's 313 universities, middle and primary schools. By 2011, a total of 5,374 such lights had been installed to provide students a quality and safe traveling space.



The Taipei Flower Exposition – the Flower Clock in Youth Park.

Part 4 Robust and Comprehensive Public Facilities

1. Water Supply Facilities

(1) Continued, Long-term Water Supply Network Improvement and Management

In 2006, stage one of the “water supply network improvement and management” was launched; a regional water quantity measurement model was adopted for priority pipelines replacements, inspections and leak repair in selected areas where water resource management efficiency was less than desirable. This multifaceted formula was designed to improve the water supply network. By yearend 2011, 966.7 kilometers of pipeline were replaced, and 2,094 kilometers of pipeline were tested and inspected.



Pipeline network improvement.

(2) Water Transmission Pipeline Engineering along Guandu Line

3,435 meters of the 2,000mm-water-transmission pipelines along Guandu Line were newly installed. The project is slated for completion in February, 2012 to connect to the water pipeline network in downtown Datong and increase water supply flexibility. The dual water supply system is expected to take shape in the Shilin and Beitou districts: the new system will provide household water to newly developed areas in Sanzhi and Tamsui.

(3) Water Transmission Pipeline Engineering along the Anhua Pressurization Unit

The Taipei City Government added 2,300

meters (2,176 meters were conducted by the shield tunnel boring machine; the rest of the 124 meters was done using open-cut engineering) of new 1,500mm-water-transmission pipelines to the Anhua Pressurization Unit along Xindian Line. The project is slated for completion in August, 2012. The new unit will replace the existing Zhonghe Pressurization Unit to supply household water to the Zhonghe, Yonghe and Xindian districts. The existing Zhonghe Pressurization Unit will supply 400,000 tons of water to Zhonghe, Tuzheng and part of the areas in Banqiao daily, according to the second-stage Banqiao-Xindian Project. The Anhua Unit and the Zhonghe Unit will serve as a dual system to support each other to meet household water demand.

(4) The 6th Water Purification Processing Facility Construction at the Zhitan Purification Plant

In honoring the spirit of water resource sharing championed by the Water Resources Agency, Ministry of Economic Affairs, the Taipei City Government actively promotes a water supply improvement program. The Taipei Water Department, Taipei City Government worked in coordination with the project's stage-two engineering. Upon completion in August, 2013, the facility is expected to supply a daily maximum of 100.5 million tons of clear water outside the city's jurisdiction area to improve water use safety and stability in northern Taiwan, while enhancing operating flexibility at the Zhitan Purification Plant.



An overview of the Zhitan Purification Plant.

(5) Emergency Water Supply Facilities

The Taipei Water Department, Taipei City Government works in coordination with the 13 disaster sheltering parks around the city to set up emergency water supply facilities to ensure that residents can still access drinking water during quake disasters. So far, emergency water cisterns have been set up in nine disaster sheltering parks, including: Minquan, Daan, Fuxing, Rongxing, the Shilin Presidential Residence, Sonde, Jinghua, Nangang, and the 228 Peace Memorial Park. The rest of the four facilities will be completed in succession by 2013. The Taipei City Government also planned 37 emergency water access units, and 34 have been completed. The rest of the three units will be completed in 2012 in succession.



Emergency water access unit.

2. Hot Spring Resources Management

(1) Implementing the Designated Hot Spring Access Expropriation and Fund Use

The hot spring resource management fund was established to promote hot spring resource management. In 2011, four units – including the Taipei City Hot Spring Development Association – received subsidies to conduct hot spring resource conservation, management, the promotion of sustainable hot spring use, plus research and development.

(2) Developing Hot Spring Acquisitions and Supplies, Reviewing Operating Permit Application

“The Taipei City Hot Spring Development and Operating Permit Application Review Commission” was established to work with the Taipei City Hot Spring Management Project and assist in the establishment of the hot spring acquisition program. The Commission is in charge of issuing development permits for hot spring acquisition and supplies, and reviewing hot spring operating permit applications. So far, three hot spring development permits were already approved and issued to three places, including the Foot Pond of Beitou Quanyuan 48 Park by the Department of Economic Development, Taipei City Government in addition, three hot spring water rights permits were distributed.

(3) Foot pond of Beitou Quanyuan 48 Park

The Taipei City Government set up a Foot Pond in Beitou Quanyuan 48 Park, so that residents can enjoy the fun of soaking their feet in the hot spring pond. Since its inauguration on January 22, 2011, 300 people visit the foot pond daily on average. A user survey was conducted in June, 2011, and survey results showed that 97.3% of the people were very satisfied and pleased with the fact that “the park indeed has provided a quality leisure space” for all.

(4) Taiwan's First Hot Spring Soap

The Department of Economic Development, Taipei City Government commissioned soap makers to collect the hot spring florets on the white Sulfur Hot Spring in the Sulfur Gorge in Beitou. The florets were cleaned and sifted and used as an ingredient in the specialty soap of hot spring gift boxes unique to Beitou's hot spring resort area. A limited 2,500 gift boxes were sold during the 2011 Taipei Hot Spring Festival. The gift boxes were marketed between November 4 and 7 in 2011, and sold in the hot spring resorts starting on the 8th. A box of two soaps was priced at NT\$300; all the items were sold out.

3. Natural Gas Utilities

The supply of natural gas in Taipei City comes from four city gas corporations: the Great Taipei Gas Corporation supplies gas to: Zhongzheng,



Hot spring soap is marketed during the Hot Spring Festival.

Daan, Xinyi, Songshan, Zhongshan, Wanhua and Datong administrative districts, and Shilin district (including just two boroughs: Mingsheng and Fuhua). The Yang Ming Shan Gas Corporation provides gas to the Shilin (excluding Mingsheng and Fuhua boroughs) and Beitou administrative districts. Shin Shin Natural Gas Co. supplies gas to the Wenshan district; Shin Hu Natural Gas Co., the Nangang and Neihu districts. By the end of 2011, these four corporations supplied a total of 334.63189 million cubic meters of gas to 646,056 households, accounting for 65% of the total households in the city's supply area.

All the gas companies in the City completed the installation of a central monitoring system successively to readily keep track of the status of each gas storage tank, gas pressure regulator station, and high-pressure pipeline gas supply, to ensure gas supply safety and gas transmission service quality. 32 gas supply regions in the service area are demarcated and emergency containment valves and pipeline network connections are deployed to ensure better disaster prevention and service restoration. Regular disaster-prevention drills are conducted on the network of pipes to improve public safety.

The four gas companies also conducted regular, automated inspections and maintenance work on various gas storage, transmission and distribution facilities, while periodically conducting pipeline inspections and replacements. In 2011, 7,705 kilometers of pipelines were inspected, and 58 kilometers of the pipes were renewed,



Inspecting gas tank facility maintenance at gas companies.

at a replacement rate of 2.5%. Additionally, each individual gas company provides free, once-every-two-years household gas pipeline facility security checks to users. In total, 292,829 households received checks in 2011; meanwhile, the companies also strengthen user safety education during security inspections to raise awareness about – and prevent – carbon monoxide poisoning.

4. Electricity Supply and Gas Stations Safety Management

Taiwan Power Company houses three operating centers in Taipei City, servicing 1.1 million households. The Taipei City Operating Center is in charge of Daan, Zhongzheng, Zhongshan, Wanhua, Xinyi, Songshan, and Datong administrative districts; the Taipei City Southern Region Operating Center is responsible for Wenshan District, while the Northern Region Operating Center oversees Shilin, Beitou, Neihu and Nangan administrative districts. An emergency repair hotline, “1911” was set up to provide instant, speedy service in the event of a power cut.

In hopes of reinforcing gas station management, inspections are conducted continuously on gas stations' safety management. 61 gas stations and eight liquefied petroleum gas stations received inspections in 2011. A majority of these stations successfully met safety standards; those who failed the inspections were able to rectify failings and make improvements within a short time.

PART 5 Thoughtful Residential Placement and Land Administration Policies

1. Versatile Residential Placement Assistance and Services

The Taipei City Government is devoted to reinventing residential services. In addition to providing public housing leasing services, encouraging the reorganization of public housing community management, and improving the surrounding environment of public housing on lease, the Taipei City Government also works with the Central Government to process housing subsidies, plus promoting uniform housing designs and expanding the Residential Service Platform. At the end of 2010, the Taipei City Government inaugurated a “leasing instead of buying” residential placement policy, and has since been developing a multifaceted formula to increase the inventory of Taipei's public housing units. In 2011, the Taipei City Government began conducting a leasing program for the Dalongdong Public Housing Complex.

(1) Public House Leasing Continues

In coordination with tenants whose contracts expired for their public housing tenancy, the Taipei City Government conducts qualification reviews for tenants looking to extend their leasing contract, and public housing leasing and notarization procedures. By the end of 2011, a total of 1,396 units extended their contracts for leasing public housing units, including Zhongzheng (474 units), Wanfang C (6 units), Yanping (33 units), Nangang No. 1 (24 units), Xining (453 units), Huaisheng (2 units), Donghu C (42 units), Sisidong Village C (29 units), Dali Street (32 units), Yanshou P (86 units), Wanmei (4 units), Taiwan Fertilizer (5 units), Wanle (197 units), and Huachang (9 units).

(2) Providing Transitional Housing Leasing Assistance

In a move to maximize the benefits of the City's residential resources, while alleviating the financial burdens on young families in finding housing, the Taipei City Government is leasing transitional public housing units to young families for short-

term residence during the units' vacancy. In 2011, a total of 78 units were opened up for short-term leasing: including 66 units in the Keelung River Phase 3 Public Housing Complex, and 12 units in the Yongping Public Housing Complex.

(3) Regulating Public Housing Community Management

The Taipei City Government successfully assisted 165 public housing communities in setting up community management systems (204 management commissions have been established as of now) in accordance with statutes governing the management of apartment housing. By the end of 2011, 184 have completed structural preparations and filed for applications with the Building Administration Office, and 164 have completed management maintenance funds for expropriation.

(4) Improving the Landscape of Public Housing Leaseholds

In light of the fact that many public housing units for lease are in poor shape, the Department of Urban Development, Taipei City Government invited different agencies to launch inspection tours of public housing units for lease, to enhance and improve the quality of these residential areas. By the end of 2011, the inspections were completed on 23 public housing units for lease. Repairs and renovations will be in place in 2012 targeting the less-than-desirable areas of the housing units, based on the degree of dilapidation and priority needs, to improve the comfort and living quality of the tenants.

(5) Comprehensive Housing Subsidy Assistance for Taipei Residents

The Taipei City Government works with the Ministry of the Interior to provide housing subsidy services. In 2011, service items available included: rent subsidies (the highest subsidy was NT\$ 3,600 dollars monthly for every individual for up to one year), housing mortgage interest subsidies (as high as NT\$2.2 million for up to 20

years) and housing renovation mortgage interest subsidies (as high as NT\$800,000 dollars for up to 15 years). There were 7,324 households in Taipei City which qualified for these services. Also, the Taipei City Government initiated a Happy Family Project for Young Couples that provides rent subsidies (for as high as NT\$3,600 for as long as 2 years) and housing mortgage interest subsidies (for as high as NT\$2 million for as long as 20 years). A total of 3,901 houses benefited from the project.

(6) Barrier-Free Residential Spaces for “Aging in Place and Housing for All Ages”

The Taipei City Government adopts a “design-for-all” general design principle to build living spaces that are accessible and user-friendly to the elderly, the weak, womenfolk and toddlers. In 2011, demonstrative renovations were conducted on 12 households for lease: the Taipei City Government hopes to encourage all public and residential housing complexes to model themselves after these completely made-over houses, and use them as models to promote a “design-for-all” concept. Additionally, the Taipei City Government cooperated with the Industrial Development Bureau, Ministry of Economic Affairs to kick off a “Made-in-Taiwan Building Material Supply Chain for Design-for-All Public Housing,”

featuring design-for-all as the core principle to incorporate locally produced building materials, locally trained interior designers and construction contractors. The team then created three demonstrative houses inspired by the “design-for-all” concept in the Keelung River Phase 3 Public Housing Complex. The Taipei City Government hopes to lead by example in adopting “design-for-all” and encourage all other housing units across the city to follow suit.

(7) Public Housing Complex in Dalongdong for Lease

110 households in this particular complex have been advertised for rent to lessen financial burdens on young couples that have just started a family. The program was part of the “Happy Motherhood” project by the Department of Civil Affairs, Taipei City Government that targets young tenants who have just started a family; the tenants are provided the bare basic furniture to furnish their home. Also, contracted furniture makers provide favorable discounts to public housing tenants. These policies aim at fortifying the government's housing placement assistance to make it more comprehensive and robust.

2. Enhancing Land/Property Utilization

(1) Expropriation and Appropriation of Land



A sample design-for-all housing unit in the Dalongdong Public Housing Complex.

In light of the growingly dense urban population and the flourishing economy, land acquisition becomes increasingly difficult as land value rises sharply. The Taipei City Government actively processes land acquisition deals needed for public infrastructure. In 2011, a total of 22 private land expropriation deals were reached: the deals expropriated 82 lots of land from 360 households the total area of which was measured at 0.4977 hectares with compensation totaling NT\$686,940,916. The Taipei City Government also completed 53 cases of public land appropriation and 322 lots with an area of 12.2876 hectares in hopes of facilitating public infrastructure implementations.

(2) Zone Expropriation

To expedite the completion of Taipei's urban planning blueprint, the Taipei City Government has undertaken 14 areas of zone expropriation totaling 781.17 hectares by year-end 2011. The completion of this project availed 215.41 hectares of land to construction; 565.77 hectares were earmarked for public facility constructions, such as roadways, parks, public schools and other public facilities.

The Taipei City Government is working on zone expropriation projects covering the new community in Qiyan, and Beitou/Shilin Technology Park, the total size of which was 106.91 hectares. Upon completion, 52.20 hectares of land will be available for construction projects, and 54.71 hectares will be allotted for public facilities construction. The completion of the redevelopment is expected to increase land use efficiency, multiply land appreciation value, improve cityscapes, and fortify overall urban development.

(3) Urban Land Readjustment

The Taipei City Government has been promoting urban land readjustment for over 40 years. The land is earmarked for public facilities needed for urban construction; the project also bears witness to the development history of various major construction projects in Taipei City, such as the Taipei 101 skyscraper,

Nangang Economic and Trade Park, Taipei Neihsu Technology Park, National Taiwan Science Education Center, Songshan Minsheng Community, Shilin Central Community, and Songshan Station. These projects bespeak the City's many achievements in urban land consolidation. By year-end 2011, Taipei City had completed 920.14 hectares of property in its urban land readjustment project, constituting 39 blocks; and the total construction-ready area totaled 544.42 hectares for building purposes. The City also acquired another 375.72 hectares of property for the construction of roadways, parks, and public schools.

Urban construction projects are a great means to incentivize participation from the private sector. In addition to the infusion of plentiful funding and input from the private sector, spontaneous public participation also forges a collective public consensus and builds regional identity to encourage local construction development and prosperity. The Taipei City Government rewards landowners to initiate and organize their own unions for urban land consolidation efforts. In 2011, assistance continued for Nangang section in Nangang, Yucheng in the Nangang District, southeast side of Nangang No. 1 Park, Huaisheng in Daan District, 6-6 residences in the Shilin District, Shitan Borough in the Neihsu District, and 12 residences in Beitou for land consolidation.

Conclusion

"Taipei is awesome for its level roadways; the city successfully manages its rivers to revitalize waterfront spaces; the streetlamps are bright and the parks are beautiful; the wastewater has been dredged to clean up the streams and brooks." This short text stands for the mission statement of Taipei City Government's public infrastructure assignments. The Taipei City Government hopes that a leisurely walk in a sea of flowers by riverside parks, an exhilarating ride down bike lanes, and the enthralling flower expositions will define and highlight Taipei residents' lifestyle in this beautiful metropolis.