Chapter 10

Public Infrastructure

Public infrastructure is crucial to municipal construction. With the completion of the Fubei Underpass and Kanghu Road, residents of Taipei city can now enjoy improved traffic service.

Benefits provided for residents are as follows:

- Sidewalk renovations and arcade leveling to improve pedestrian space;
- Flood control and drainage system construction to protect against flooding;
- 83.10% of households with access to sewer connection;
- Theme flower festivals to provide residents venues for leisure and relaxation;
- Public housing and utility construction to make Taipei city a truly resident-friendly place.
Chapter 10 | Public Infrastructure

Public infrastructure construction, such as flood control and drainage construction, sewage systems, urban greening and beautification, parks and streetlamps management, public housing construction, piped water supply construction, public facility land acquisition, utility construction, etc., is an intricate undertaking. Facing growing metropolitan competition from across the world, the Taipei City Government is devoted to its public infrastructure construction to build a safer, more resident-friendly, and quality brave new Taipei.

Part 1 Traffic Construction

The Taipei City Government is sparing no effort to develop expressways, to build and renovate urban roadways and bridges to relieve the rapidly growing traffic triggered by rapid urban development, in order to facilitate civilians’ traveling needs.

1. Expedient Road Constructions

(1) Expressway Systems

The system is primarily constituted of the Jihe Expressway and Tiding Avenue in the east, the Zhoumei Expressway to the west, and the Huanhe Expressway that connects northern Taipei to the south, the Shuiyuan Expressway, the east-and-westbound Civic Boulevard and Zhengqi Bridge, the north-to-south Jia guo Overpass, and the Xinyi Expressway—43.3 kilometers of this network has been completed.

(2) New Construction and Expansion of City Roads

Nanshen Road, from the Garbage Trucks lane on the ramp onto the Second Northern Interchange to the city boundary, was expanded to 15 meters in width and 2,490 meters in length. It was officially commissioned on March 22nd, 2006. Beyond saving travel time between Shengkeng and Shiding Townships in Taipei County, the expansion stimulates tourism activities, elaborate agriculture and industrial developments, and abates impact on local traffic caused by garbage trucks from the Shanzhugu landfills.

Kanghu Road, 1,875 meters in length, from the Chenggong Road curve at the east side of Dahu Park to Kangle Street north at the White Horse Villa, was created to ameliorate heavy traffic in the Donghu area.
Night views by Chengde Bridge
area. Since its inauguration on December 6th, 2006, heavy traffic in Donghu area has been effectively abated; Kanghu Rd. has formed a convenient traffic network with the MRT Neihu Line and in turn has helped to advance local business development.

The Maokong Gondola runs 4,030 meters in length; its construction began on October 11th, 2005. By the end of year 2006, 97.1% of the project had been completed. The Gondola is expected to begin service in mid-2007. Upon its completion, the Maokong Gondola will serve as a leisure transportation alternative to travelers, and will enliven the local economy by attracting more visitors to the area through the provision of a robust cable car system.

From the intersection of Fuxing North Road and Minzu East Road, the Fubei Underpass, a total length of 677 meters, going north under the Airport, connecting Binjiang Street and Dazhi Bridge, is the world’s very first underground roadwork that extends under runways while the Airport is fully operating at ground level. The underground passage first opened to traffic on November 29th, 2006, and has effectively eased congestion caused by the Airport’s blocking of the City’s south-north traffic. The passage provides convenient traffic service between Neihu, Dazhi, Shilin, Neishuangxi and Waishuangxi districts, and quick access to downtown.
(3) Road Renovations

The total road area of Taipei City is about 20 million square meters. For expedient car travel and pedestrian space, the Taipei City Government has fortified decrepit roads with fresh pavements to provide better service. 837,000 square meters of road surface were renovated in 2006.

2. Smooth Pedestrian Space

(1) Sidewalks

The sidewalks of Taipei City cover a total area of about 2,500,000 square meters. From 1999 to year-end 2006, the completed improvement reached an area of 1,888,113 square meters, covering 75.2% of the total sidewalk area in Taipei City.

To improve the road conditions of the City, the Taipei City Government launched a “Road Concern Report” campaign for the public to report road concerns. The toll-free hotline number is 0800-523888. From April 21st, 2002 to December 2006, 24,855 cases have been reported by helpful commuters.

(2) Leveling Arcades

The total length of arcades in the City is about 170,000 meters. The Building Administration Office of Taipei City Government has evaluated these arcades based on their traffic convenience, tourism aspect, key business circle prospect and traffic artery significance, and selected about 110,000 meters of arcades of favorable improvement potential for renovation. Since the leveling project began in 2002 to yearend 2006, about 23,000 meters of verandas had been thoroughly renovated.

3. Bridge and Tunnel Constructions

There are a total of 415 bridges in Taipei City, including 187 beam bridges, 34 river-crossing bridges, 29 vehicle flyovers, 87 pedestrian overpasses, 9 tunnels, 11 vehicle underpasses and 58 pedestrian underpasses.

(1) Zhongshan New Bridge

The old Zhongshan Bridge was demolished on April 30th, 2003. The new bridge was constructed on the same site between the two banks of the Keelung River to connect Zhongshan North Road. The new bridge was elevated to comply with the Keelung River flood control frequency height construction scheduled for the next 200 years. Reconstruction work started on February 2nd, 2004; 81.5% of this project was completed by the end of year 2006. Its completion is slated for the end of August, 2007.

(2) The Demolition of Guanghua Bridge

Guanghua Bridge was torn down in view of improving the urban landscape, local economic development and removing urban development impediments in order to tie in with urban planning and
landscape renovations. Demolition began on December 12th, 2005, and was completed on September 18th, 2006.

(3) Pedestrian Overpasses Constructions

The Rainbow pedestrian Bridge, 4 meters wide and 167 meters long, characterized by an S-shaped suspended-deck structure which is supported by arched beams and tension/torque elements, between Xinning Road in Neihu and Raohe Street in Songshan, crosses over the Keelung River. Construction started on July 15th, 2005; and 66% of the work was completed by the end of year 2005. Its completion is slated for July, 2007.

The Xinshun Intersection crossing Tiding Avenue and the Embankment Pedestrian Overpass straddles Tiding Expressway and the Embankment to connect the Rainbow Riverside Park. The bridge is 3 meters wide and about 130 meters long. Work began on September 15th, 2005, and was completed on August 28th, 2006.

The Wanhua Cloud-Mounting Pedestrian Overpass is located at the intersection of Guoxing Road and Shuiyuan Road. The main bridge spans 42 meters, and the bridge floor is 5 meters wide. Since it crosses over the Shuiyuan Expressway above the top of the banks, the bridge floor is now elevated to 13 meters off the ground. Construction began on November 14th, 2004, and it was in service on June 18th, 2006.
(4) The Old Xiangxi Walkway of Zhouchi District and River-crossing Bridge Construction

Providing residents with joyful access to bike rides and views of the countryside, a 900-meter trail, along the left bank of the old Shuangxi Creek, and a bridge of 40 meters in length and 3 meters in width were built at alley 49, section 6, Chengde Road. Construction began on May 2nd, 2006, and the work was scheduled to be completed about 5 months later on October 19th, 2006.

(5) Pedestrian Underpass

For pedestrians’ safety and due to heavy traffic, the new pedestrian underpass was constructed at the intersection of Zhongshan South Road and Changde Street. This was the first underpass with elevators in Taipei City. Completed on June 30th, 2006, its went into service on July 17th of the same year.

(6) Bridge Inspection, Maintenance and Improvement

In 2006, full-scale inspections and renovations were done on 145 bridges. Inspection related to the structure checks after earthquake and river-crossing bridge inspections during the flood control period were added. For bridges that left questionable inspection results after visual examinations, a meticulous follow-up exam and reevaluation were to be conducted in the following year. Funds would be earmarked for bridges that require maintenance and reinforcement if the new inspection results deem it necessary to ensure public safety.

(7) Bridge Lighting and Beautification Constructions

Bridge lighting and beautification constructions were completed on the Dazhi Bridge, the Chengde Bridge, the Bailing Bridge, the Minquan Bridge, the MacArthur Bridge No 2, and the MacArthur Bridge No 1 by the end of year 2006.

4. Construction of Common Ducts

In light of moving ahead with the common ducts construction projects, the Taipei City Government, in August 2003, announced a network of nine common duct routes in accordance with the Common Duct Law. Route Civic Boulevard and Route New Community (Keelung River bend-straightened area) have been completed. Route Zhouchi and the Nangang Economy and Trade Park common duct began operations, respectively, in March and April, 2006. Route Dadu Road is 3.3 kilometers long. It was built at the bottom of the existing embankment slope at the double-chamber...
of 4.2 meters in height and 5.5 meters in width to collect housing transmission lines, power
distribution, military signals and reordered pipe lines. By the end of year 2006, 40.68% of the Bid
1 construction, and 38.9% of the Bid 2 constructions had been completed. Upon completion, power
supplied by the Xiandu superhigh-pressure substation will be channeled to the Greater Taipei area
through the Dadu Road common duct to connect with the common duct attached to the Zhoumei
Expressway Bridge, putting to full use their connective applicability. The ducts can also furnish
power to Shezi Island, Zhoumei District and Guandu Plain Champaign.

Part 2  Flood Control and Drainage Construction

The Taipei City Integrated Water Control Management Commission was set up on August 2nd,
2005 with a view to introducing a new water management mechanism for “Retaining upstream water
resources, reducing midstream flood risks, and preventing downstream flooding,” incorporating
government and private inputs to establish a safe, cozy, pleasant and healthy eco-metropolis.

1. Launching an Integrated Water Control Mechanism in Taipei City

The Commission held two conventions on June 2nd and October 16th in 2006, in which
promotion strategies were thrashed out to enlist private resources to institute a robust system to
advance a well-rounded flood and disaster prevention program.

2. Water Conservancy Facilities

Taipei City’s flood control installations are centered on embankment constructions, in
coordination with the rebuilding of watercourses, dredging as well as the setting up of pumping
stations at the main exits of the drainage pipes behind the embankment, so as to pump off the
rainwater that is unable to be drained off by gravitational force within the city. Under the jurisdiction
of Taipei City, the flood control installations for the right banks of the Danshui River and the
Xindian River, and both sides of the banks in the upper sections above the Xuangxi Estuary of the
Keelung River have all been completed, except for the highly protected installations at the Zhoumei
Embarkment at the Keelung River, Shezi Island and Guandu flood controls downstream. Flood
protection installations at most of the tributaries have been completed.

Water renovations were accomplished for midstream Neigou Stream in Neihu in 2006. Huanggang Stream renovations in Beitou are a budgeted, continuous project slated for 2003
throughout 2008, and constructions have been farmed out in succession. The Kangning pumping
station and three such stations for Dakeng being constructed successively.

3. Rainwater Sewage Constructions

The total lengths of the City’s Rainwater Sewage Constructions, including drainage arteries and
branches are 540 kilometers long. By the end of year 2006, 518.093 kilometers were completed;
completion rate was estimated at 95.94%. In 2006, eight construction items, including the West
Xinyi Big Drainage Channels Renovations, had begun to reinforce improvement of, and construction
works on, the drainage systems. The Department of Environmental Protection of Taipei City
Government was asked to assist in the systematic cleanup of sludge. Also, the “Fragmentary
Drainage Improvement Project” was kicked off to mend the drainage bottlenecks located at over 200 spots to ensure smooth drainage flows and to reduce water accumulation. In July 2006, the “Flood Regulation and Sand Chamber on Dahu Shanzhuang St. in Neihu” was completed to better regulate accumulated rainfall, and provide landscape beautification, ecological and leisure functions.

In order to tune up water-level monitoring stations at the rainwater sewage system, the Taipei City moved to complete 121 water level monitoring stations, one-flow volume-monitoring stations and four image-monitoring stations to monitor and analyze collected data. The water level forecast model development has been completed for water accumulation areas at the Yucheng Pumping Station.

Lastly, to cut back cable contractors from repeatedly driving nails into sewage structures when attaching cables, and prevent loose cables from hanging about, contractors are encouraged to use rack structures to better organize cables in an orderly fashion. By the end of 2006, 366 kilometers of sewers with racks had been completed.

Part 3 Wastewater Sewage Constructions

There are 665,000 households with wastewater sewage connections in Taipei City. By the end of year 2006, 552,590 households had the sewage connections — the rate of users’ pipe connections was measured at 83.10%. The figure marked a 4.07% growth from 79.03% at yearend 2005, successfully reaching the annual target growth rate of 4-5%. Figure 1 shows the rate of users’ pipe connections from 1996 to 2006.

1. Pipeline Connections Across the Keelung River

To set up a backup and deployment connection between Dihua Wastewater Treatment Plant and Neihu Wastewater Treatment Plant and to improve the plant’s operation stability, a 1,324-meter wastewater pipe was installed along the north side of Minquan Bridge, across the Keelung River to connect to the waste depositories of the Dihua and Neihu Wastewater Treatment Plants. The pipe also links up with Neihu’s Plant and the Xizhu Nangang main pipe on Yuta Road in Songshan District. By the end of 2006, 96.1% of the construction had been completed and was scheduled for water channeling in March, 2006. Its completion was scheduled for July 15th, 2007.

Figure 1: Household Sewer Connection Rate in Taipei City from 1996 to 2006
2. Operation Management and Maintenance of Wastewater Sewage Systems

The average daily volume of treated wastewater for the Danshui Wastewater Sewage System was 957,224 tons, and the quality of discharged water has achieved the National Effluent Standards in 2006.

By the end of year 2006, 4,279 subscribers’ applications for pipe cleaning services had been filed, with road broadening constructions, milling and pavement and pipeline facility improvements to create 77 new manholes (including the cleanup of retaining walls). 1,313 meters of pipes (branch systems) were repaired, and 19,702 meters of sewers cleaned and inspected.

3. Dihua Wastewater Treatment Plant

The Upgraded Secondary Treatment Project of the Dihua Wastewater Treatment Plant was inaugurated on October 30th, 2006; its daily wastewater treatment volume is about 450,000 to 500,000 tons. Its maintenance is commissioned to professional contractors, and the first staff members were stationed at the plant on August 16th, 2006 to undergo operations training. The official takeover of operations was scheduled for February, 2007.

4. The Sights and Sounds of the Dachia Section of the Keelung River

The Keelung River was once known as “The Blue Urban Venice” of Taipei City. But it became severely polluted due to both economic development and population growth. In response, wastewater sewage and ancillary facilities were constructed to treat both industrial runoff and domestic sewage; the final effluent was discharged to improve water quality. In February 2004, the river tour was reintroduced after years of suspension; fish and water birds also returned to the river to live and breed. Abominable sewage was treated at last and the river transformed to clean, clear water. Once again, the cultural glory and clear water reputation of the Keelung River has been restored. Taipei residents have rediscovered the cultural and ecological beauty of the river.

As the city’s wastewater sewage connections began to expand, lower levels of contaminants were also discharged into the river. In addition to expediting users’ pipe connections, the sewage interception stations were set up in areas where connections were yet to popularize, to intercept Qingtian sewage transportation to wastewater treatment plants before being discharged. Along the lower Keelung River and the Nangang Sections is a network of five fully operational interception stations, including those at Yucheng, Nanjing, Songshan, Xinsheng and Zhongshan; with the addition of the Fuyuan and Dalong stations, an expansive sewage interceptive area has been formed. With aeration facilities in place to increase the oxygen level of the river, contaminants and pollutants can be quickly dissolved to reduce odor.

The Purification, Aeration and Oxidizing Project at the Nanhu and Chengmei Rainwater Pumping Stations was designed to intercept rainwater, and allow the Qingtian Water Pumping Station to treat it before being discharged. It can serve to improve the quality and quantity of water. The upper part of the facility can be used as a sports venue, or for landscape greening. In addition to reducing the level of pollution, it can also facilitate the development of water sports. The Nanhu facility underwent a trial operation in November 2006, and turned up excellent results. The Chengmei facility is estimated to be completed in January, 2008. Overall, the Dachia section of the Keelung River has been a success — the pollution level has been ameliorated from “severe” in 2006 to “medial.” Taipei’s residents can now enjoy a quality lifestyle.
5. Beautification of Back Alleys

The many long and narrow back alleys have always seemed a unique part of the Taipei City landscape. In order to raise community awareness of these places and address existing problems of space, the Back Alley Renovation Project was launched in 1998, and 233 alleys have undergone transformation through the beautification program through 2005. The formerly littered, disorderly and often ignored back alleys have become cozy leisure venues, far removed from their original function as disaster-prevention escape routes. The Taipei City Government has beautified 175 back alleys, which had previously appeared as dirty and dark surroundings filled with illegal structures. An interesting array and multifarious spatial arrangements have sprouted the so-called “lifestyle alley,” “schoolyard alley,” “recreation alleys,” and “backyard gardens”.

Part 4 Urban Greening and Embellishment

The Taipei City Government continues its endeavors to construct parks and greening areas to increase the green area coverage per capita and to organize an array of topical flower exhibitions to furnish its residents with high-quality leisure activity venues.

1. Raising the Park and Green Area Per Capita

Currently in Taipei’s urban planning and non-urban planning, a total of 1,013 lots of land with a total area of 1,947 hectares have been reserved for parks, greening areas, plazas, and children’s playgrounds. By yearend 2006, 784 parks (including some partially constructed parks) and green areas have been developed or budgeted for development, totaling 1,327 hectares. This is equivalent to 5.03 square meters of green area coverage per capita. Table 1 shows the green area coverage per capita from 1998 to 2006.

2. Park Constructions (Expansions) and Renovations

Some of the important park projects such as Wenshan No 19 Park, Daan No 408 Park, Nangang No 48 Park, Beitou No 233 Park, Wenshan No 30 Park, Xinyi No 413 Park, Xinyi No 382 Park, and Wanhua No 402 Park were constructed (expanded).

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<th>Year</th>
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“Fuyang Ecological Park”, inaugurated on October 22nd, 2006, has an area of 3.8 hectares. The founding principle was the incorporation of “A Reduction of Manmade Facilities and Simplicity” with the suggestions of ecological preservationists and local residents to make a series of unique ecological parks in the city.

3. Road Greening and Beautification

This project was designed to plant bright, colorful potted plants in the channeled islands on main arteries, traffic circles and the green area of access roads. In recent years, shrubs have been added to this list and either trimmed into various geometric figures, or fitted into part of a landscaping program to create a 3-D or graded look to improve roadside landscaping. By the end of 2006, the total area of road beautification had already reached 35,930 sq. meters.

To strengthen the functionality of urban greening, and enhance the effects of roadside greening, street trees have been planted along the city’s sidewalks that are wider than 2.5 meters. Special attention has also been paid to planting trees in empty tree holes and renewing tree species. In 2006, the new additions (replacement) amounted to 1,180 street trees, 175,950 shrubs, 3,997 square meters of lawns and 136,967 potted plants (groundcover plants).

4. Flower Shows and Flower Season Events

(1) The Rose Festival and Chrysanthemum Show

The Rose Festival made its debut in the CKS Shilin Presidential Residence. Over 3,000 colorful and enchanting roses were exhibited from April 23rd to May 1st in 2006, attracting about 80,000 visitors to the show. The Chrysanthemum Show was held from December 16th, 2006 to January 7th, 2007, with “Golden Pig” as the theme in marking the year of the pig. Many varieties of chrysanthemums were used to embellish the modeled pigs to display a joyous occasion. The show attracted about 300,000 people.

(2) Camellia Fair

The Floriculture Experiment Center of the Parks and Street Lights Office is a forerunner of Taiwan’s camellia culture. Since 1949, the Center has devoted its resources to camellia species collection, domestication and culturing improvements in technique. “The 2006 Taipei Camellia Fair—Heroes, Beauties, and Camellias” was held from January 6th to the 15th, 2006, an event that attracted about 14,800 visitors.
(3) Yangmingshan Flower Festival

With the theme of “Vigil Among Flowers”, the 2006 Yangmingshan Flower Festival was held from February 24th to April 3rd, 2006. It provided dazzling sights of cherry blossoms at night from 6 to 9 p.m., to great critical acclaim and attracted over 1.43 million visitors.

(4) Taipei Flower Show

The 2006 Taipei Flower Show featured “Wedding Banquet” as its theme. It was held at the Daan Forest Park from November 4th to December 3rd, 2006, with fresh flowers and green leaves as decorative materials to create a beautiful, warm and joyous banquet, attracting about 515,000 people.

5. Streetlight Management and Maintenance

Streetlights allow residents to move about freely at night and serve to prevent crimes. For the past 5 years, Taipei City has achieved an annual growth rate of streetlight installations of 3.5%. By yearend 2006, Taipei City had a total of 140,320 streetlamps. To enhance illumination in school neighborhoods and students’ traffic safety, 5,294 streetlights have been installed in the lanes and alleys surrounding 313 colleges, middle- and primary schools.

To smarten up the city landscape and improve the lifestyle quality of residents, the government has rendered obsolete the FRP switch boxes and developed a light pole with an embedded light source. By the end of 2006, 3,330 new light poles with shared bases have been installed.

6. Park Outsource Management

The Taipei City Government has outsourced the management of several park facilities to private contractors, including the Youth Park Golf driving range, 2 tennis courts (10 sports facilities) and 43 pools (in 18 sites), and 13 warm-water pools (in 9 places).
Part 5 Public Housing Development

To step up public housing service standards, the City Government has changed its priority from meeting the quantity demand of public housing into the quality promotion of the living environment. In addition to meeting goals of housing completion allotments, sales and leasing services, the government also aims to renovate the management structure of the housing.

For year 2006, the Erba Community, the Ligong Community Public Housing Site A, and the Keelung River Phase 2 and 3 Public Housing Projects were allotted for sale. 24 units were allotted at the Erba Community to the military; the Ligong Community Public Housing Site A is a 108-unit compound, 58 units of which were allotted to the military, and 4 were designated commercial facilities. The remainder of the 46 units were sold to Taipei citizens. The Keelung River Phase 2 Public Housing was a collaborative project with the Taipei City Hoping Elementary School public construction projects; a total of 7 units were removed. Phase 3 was part of the joint project with the Qiyan Community expropriation of public constructions, and 6 units were removed, with 2 units designated for the Nangang Economy and Trade Park. 42 units were put up for sale, and 5 for leasing for Commercial Public Housing purposes and Service Units.

For public house leasing, a total of 2,258 units have extended their contracts for leasing public housing units, including 22 locations in Zhongzheng (108 units), Wanfang C (191 units), Qiyan (56 units), Nangang (247 units), Xining (117 units), Maosan (102 units), Jungong (30 units), Huasheng (173 units), Rongxing (31 units), Longshan (32 units), Wanning (9 units), Wangmei (167 units), Taiwan Fertilizer (211 units), Donghu C (8 units), Sisidong Village (2 units), Wanfang Community Center (273 units), Wanfang (40 units), Donghu E (3 units), and Huachang (458 units).

To expedite the redevelopment processing of Xiude Public Housing, the City Government reviewed the construction project and decided to allot 306 units of the Keelung River Phase 3 Public Housing and 88 units of Yongping Public Housing for transitional leasing purposes. All of them have been designated for the 203 units of Xiude households during the period before demolition and reconstruction.

In 2006, 164 public housing communities set up building management systems. The conveners’ elections were held for community committees for 107 public housing zones, among which 67 have completed structural preparations, and 23 have achieved management maintenance funds for community public works.

May 14th, 2006, 3 years after the Huachang Community lockup in response to the SARS outbreak, Mayor Ma Ying-jeou and former Deputy Mayor Yeh Ching-chuan jointly attended the community’s inauguration ceremony to observe the 3-year anniversary of the lockup. For community residents, it was as good as a cardiac stimulant to invigorate the community spirit in the hope of a new beginning.

In order to improve the environmental quality and the community’s greening and beautification of Wanfang and Wangmei Public Housing units for lease, and activity demands of community elders, women and children, an all-round community renovation program was launched, in which an obstacle-free environment, physical activities and recreational facilities, effective parking arrangements, nighttime lighting additions, community space reorganization and community image rebuilding were introduced. In addition to a number of
residential planning meetings, tenants of Wanfang Public Housing voted to change the name of their community to “Wangle Public Housing for Lease” in the hope of creating a friendly, bright community living-style.

### Part 6 Public Utilities

#### 1. Water Supply Facilities

(1) Improvement and Management of the Water Supply Network

In 2002, the City Government drew up a “Midterm Plan for improving management network” for the period from 2003 to 2006. To continue water leaks improvement effectiveness, a leaks management model was installed through zoned metering, and the Taipei Water Department has drafted an “Improvement and Management of Water Supply Network” framework (from 2006 to 2015). This plan will serve as a long-term strategic policy for improving its management network in the future. Phase 1 policies were drawn up and approved in 2005, effective for the period from 2006 to 2010.

In order to prevent leaks from worsening, and to comply with the annual pipeline replacement rate of 1.5%, the City Government replaced 152.4 kilometers of pipelines, or 2.46% the of annual replacement rate.

Through pipeline replacements, leaks inspections, leak repairs, and water pressure management, the reportage of leaks and leak repair expenses have dropped gradually. The water-selling rate in various jurisdictions has also improved over the years, attesting to the government’s efficiency of its leak repair measures.

(2) Key Expansion Constructions

To raise the water pressure of water supply divisions in Nangang, and avoid energy waste caused by supply to greater areas demanding higher water pressure from the Changxing Water Treatment Plant, the Zhongxiao Pressurization Station was constructed. This new project cost a total of 33 million NT dollars. Construction began on October 5th, 2005 and was scheduled to be completed in February, 2007. The Zongxiao Pressurization Station’s daily discharge volume is 159,000 tons. Three sets of 300HP and 150HP pumping stations were installed individually at 26 meters in lift. Water is delivered through pipeline pressurization. Upon completion, water demand in Nangang’s supply divisions have been greatly improved and enhanced.

Raw water needed by the Zhitan Purification Plant is currently solely dependent on the First Raw Water Transmission Mains from the Zhitan Weir. Water from the First Raw Water Transmission Mains is 2.70 million CMD in volume, and would not have been able to meet water demands after 2011. With that in mind, the Second Raw Water Transmission Mains was built at the Purification Plant, with the existing Cukeng Weir water supply system of the Taiwan Power Company’s Cukeng Power Plant to provide water. Under normal circumstances, the Second Raw Water Transmission Mains and the existing First can operate normally to expand water transmission capabilities and improve water supply dependability; when the present raw water transmission system becomes abnormal, or when water supply is suspended during the annual report, they can replace the available raw water transmission mains to continue to supply raw water to the Purification Plant. This particular construction cost NTS843 million, and began construction in December, 2005, and was scheduled for completion in May, 2009. Actual construction progress in 2006 was way ahead of the original progress estimated.
(3) Emergency Life Sustentation Water Supply Facilities

This is a pioneering emergency life sustentation water supply station in Taiwan. In the case of major disasters (such as earthquakes, droughts, and storms), when the water supply system is severely damaged and ceases to function, this emergency facility can furnish the public with its basic water demands to maximize the time available for emergency repairs. 13 such stations were completed in 2005 (13 water allotment pools, 2 water transmission mains) capable of providing 220,000 tons of drinking water. If calculated at 3 liters of water daily per person, 3.8 million people can be well supplied for 20 days. In 2006, 17 such stations were completed (water supply mains) to supply an additional 60,000 tons of drinking water, extending the water supply period during emergencies from 20 to 25 days.

2. Management of Hot Spring Resources

In 2006, 17 hot spring resources had been designated as sites with geological value, and bulletins were posted to protect them from being spoiled. Informational signs were put up for the Heat Valley, the Sulfur Valley, and the Dragon and Phoenix Valley for educational purposes. 30 hot spring monitoring well nets are to be installed in the following years to keep precise track of the safe flow rate of various hot spring zones. 4 such nets were completed in 2006 to monitor these hot springs and estimate the amount underground hot spring resources, while revising the safe water discharge volume of the underground replenishment area to avoid over-development.

3. Natural Gas Utilities

Four city gas corporations: the Great Taipei Gas Corporation, the Yang Ming Shan Gas Corporation, the Shin Shin Natural Gas Corporation, and the Shin Hu Natural Gas Corporation play a crucial role as energy suppliers to meet the wide-ranging demands of Taipei City. All four companies have installed a central monitoring center to ensure gas supply safety and transmission quality, and completed a supply area division mechanism, deploying emergency interdiction and pipeline network connection for better disaster prevention and emergency rescue capabilities. The Great Taipei Gas Corporation supplies gas to Zhongzheng, Daan, Xinyi, Songshan, Zhongshan, Wanhua and Datong districts, and two boroughs (Mingshen and Fuhua) of the Shilin District. The Yang Ming Shan Gas Corporation provides gas to the Shilin (excluding the Mingshen and Fuhua boroughs) and Beitou districts. Shin Shin supplies gas to the Wenshan district and the Shin Hu, Nangang and Neihu districts. The 4 companies sold a total of 320.23 million cubic meters of gas to
a total of 594,250 households by the end of 2006. The prevailing rate of natural gas usage was about 63% in the city.

These four gas corporations also conduct regular inspections and replacement checks on their network of pipes. In 2006, a total of 11,800 kilometers, were inspected, and 64 kilometers of the pipes were renewed, at a replacement rate of 2.9%. Compared to 2005, there were 10,492 new customers, an increase of 1.8%.

Free periodic checks are conducted on household gas pipelines, gas meters and gas appliances once every two years. In 2006, checks were conducted on 279,032 households to promote gas safety awareness.

To improve customer service: the gas companies installed a single service channel to simplify the installation application process, payment, and user transfers. Users can conduct bill payments or account transfer online, at post offices, banks or convenient stores. An around-the-clock toll-free service is also available to handle customer inquires and emergency repair service.

4. Taiwan Power Company Business Situation
   The Taiwan Power Company is divided into three business sites: the downtown, southern and northern Taipei districts serve a total of 1,160,000 users. A toll-free line “1911” was installed to swiftly handle and manage user inquires.

5. Operation and Management of Gas Stations
   To enhance gas station management, regular checks are conducted at various gas stations in the city to ensure that they comply with safety regulations. Inspection items include: notices and signs such as “Smoking Strictly Prohibited” and “Turn off Engine to Refill” are clearly displayed, yellow lines at the oil unload zone are clearly marked, automatic safety inspections are regularly conducted on operational facilities, the operation office is noticeably displayed, the name of the station, business hours, types of gases sold and prices are marked and liability insurance against public hazards is required. In 2006, checks were conducted at most gas stations and most of them met the standard safety requirements. Improvements are enforced in stations which failed inspection, and are tracked until they pass re-examination.

Part 7 Land Acquisition

1. Expropriation and Appropriation of Land
   In 2006, there were a total of 23 cases of private land expropriation, including 74 lots, 216 households; the total area of which was 0.812817 hectares with compensation totaling NTS996,206,257. In the same year the City Government also completed 49 cases of public land appropriation (including 200 lots) with an area of 10.832341 hectares.

2. Zone Expropriation
   To expedite Taipei’s urban planning blueprint, the City Government has undertaken 12 areas of zone expropriation totaling 773.0948 hectares by yearend 2006. The completion of this project has
provided 210.5725 hectares of land for construction, while 562.5223 hectares are earmarked for public facilities such as road and sewer systems. The City Government is working on Zone Expropriation projects covering Nangang’s designated station district, the north side of the Shilin Official Residence, and the new community in Qiyen. Upon completion 12.70 hectares of land will be available for construction. 12.07 hectares will be allotted for road construction and park facilities. The north side of the Shilin Presidential Residence is to be used to house residents moving to the new public civilian housing, setting a precedence to incorporate a Green Time Capsule concept and create an all-round cultural, educational and leisure residential community. In recent years, zone expropriation and development have effectively increased land utilization and wholesome urban growth, to fulfill the ultimate goal of Equalization of land rights.

3. Urban Land Consolidation

By yearend 2006, Taipei City had completed 953.5885 hectares of property in its urban land consolidation project, consisting of 41 blocks, the total area equal to 576.7430 hectares for construction purposes. The city also acquired about 376.8455 hectares of property for roads and sewer systems. In 2006, the city put its urban land consolidation focus on the fifth phase of the Neihu District and the second phase of the Nangang area. The fifth phase redistricted area of Neihu was 40.23 hectares. Upon completion, these plots of land will provide 24.81 hectare for construction purposes, and 15.42 hectares for public facilities to meet the demands of the Nangang Economy and Trade Park, improving the city’s overall industrial and commercial expansions. The second phase of the Nangang District covers 1.05 hectares of land, 0.82 hectare of which would be devoted to construction projects; and 0.23 hectare for redistricting purposes to encourage urban renovation and beautify the urban landscape, overhauling Nangang’s urban prospects.

In 2006, the urban land consolidation project allowed a total of 3 lots of construction-purpose property in the Wenshan District and the Neihu District were auctioned, bringing in a total of NT$399,399,100.

For the purpose of accelerating land utilization, the Taipei City Government encourages landowners to initiate and organize their own unions for urban land consolidation efforts. Assistance has been provided to Huasheng in the Daan District, Lanya in the Shilin District, 66 residences in the Shilin District, Shitian Borough in the Neihu District (R7 block in urban planning), and 12 residences in Beitou for consolidation so that residents can enjoy greater participation in municipal works to facilitate the execution of better urban planning, propelling local construction development and prosperity.

Taipei is a city with a wide array of dramatically dazzling charms. Public infrastructure constructions are an important link in municipal works, and closely connected to the city’s residents. A convenient road network provides residents with an improved traveling and friendly pedestrian environment; a flood control mechanism protects the people from the woes of flooding; the sanitary sewage connection rate meets the benchmark of other advanced metropolises; parks and green areas are an index by which urban lifestyle quality is measured. Greening and landscape beautification projects have made the streets a riotous, glamorous spectacle. Land acquisition for public facilities expedites the development of various construction programs. Public housing and utilities furnish the city with an optimal living quality. With all these construction efforts brought together, a New Taipei Metropolis featuring safety, efficiency and amenity is on her way.