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● Chapter 8 Traffic and Transportation

Centrally located among the cities of Asia, Taipei is an economically prosperous metropole with thriving technology and financial service industries underpinned by a high-quality transportation system. In recent years, the Taipei City Department of Transportation has been cooperating closely with the Central Government to develop the functional vitality of Taipei Songshan Airport. It also has vigorously promoted several innovative policies to promote sustainable and humanistic transportation to further improve the quality of transportation services in Taipei.



Traffic and Transportation

The Taipei City Government has been working tirelessly towards the goal of creating a green and livable city. To this end, the Taipei City Department of Transportation has embraced a mission to provide city residents with fast, convenient, and easy transportation and a safe travel environment. The department is dedicated to creating a new humanistic environment in which all city residents can enjoy barrier-free movement, high-quality services, and sustainable, seamless, fast and convenient travel in the metropolitan Taipei area.

Part 1 Sustainable, Seamless, and Fast City Transportation

1. Citizen Mini Bus

Taipei City introduced the Citizen Mini Bus System as a relay transportation link for city residents to travel between home and MRT stations or to bus stops and stations for onward transfers, providing a time-saving and convenient "last mile" connection. The Citizen Mini Bus System was introduced in 2007. By the end of 2010, the system consisted of 11 official routes, 32 buses, 226 trips on weekdays, and 152 trips on weekends and holidays, and had a service area encompassing Beitou, Shilin, Zhongshan, Nangang, Xinyi, Wenshan and Neihu districts. In 2008, the Citizen Mini Bus System carried about 580,000 passengers. By 2010, this number had leapt to 1,760,640 passengers, equaling an average daily ridership of 4,823 people. The overall satisfaction rate with the service is about 84%. In future, the Taipei City Department of Transportation will continue to assess the feasibility of extending the Citizen Mini Bus to other districts. Considering rider rights and interests and operational efficiency, the department will continue, as well, to collect suggestions and appropriately adjust service routes and operation modes to increase ridership.

2. Taipei Bus Stations

In order to relieve traffic congestion in the Taipei Main Station Designated Area due to an over-concentration of long-distance bus routes, Taipei City established four new inter-city bus transfer stations—the Taipei Bus Station, Taipei City Hall Bus Station, Taipei Zoo Bus Station, and Yuanshan Transit Plaza—and is planning a fifth



Citizen Mini Bus promotion poster.



Ribbon-cutting ceremony for the service launch of the M12 Citizen Mini Bus.



Figure 1 : Citizen Mini Bus Route Distribution Map

—the Nangang Bus Station. In addition to lightening the transportation load at Taipei Main Station, the new stations aim to promote balanced development among city districts. The Taipei, Taipei City Hall, Taipei Zoo Bus stations, and Yuanshan Transit Plaza opened, respectively on August 19, August 5, March 20, and October 9, 2010. Since then, they have markedly improved transportation flow in Taipei, while also bringing long-distance bus service in the city past a new milestone.

3. Flora Expo Transportation Management Plan

The 2010 Taipei International Flora Expo is the first expo in the world to be held both in downtown and riverside areas. The Flora Expo comprises four major venues—Dajia Riverside Park Area, Xinsheng Park Area, Fine Arts Park Area, and Yuanshan Park Area—and is expected to attract eight million visitors.

These venues are located in Taipei's Yuanshan area. This is both an end and starting point for through traffic to and from the Neihu, Dazhi, Beitou, Tianmu and Shilin areas. To help visitors quickly reach and leave the expo site without disrupting daily life for area residents, a transportation plan based on the principles of "public transit first" and minimizing the impact on the daily life of local residents was carried out during the Flora Expo period.

The Taipei City Government has categorized expo visitors into three groups: international visitors, visitors from other counties and cities of Taiwan, and visitors from the greater Taipei metro area. The Taipei City Government is providing direct public transportation services to the expo site for all three groups. Small-car parking areas for the expo have been set up at nearby interchanges (including the Shilin and Neihu parking areas), with shuttle services to transport visitors from the parking areas to the expo sites. Visitors are also encouraged to take public transportation to minimize the impact of car traffic in the expo area.

4. Urban Bike Lanes

Taipei City is working to create a safe and friendly bike lane environment to encourage in-city cycling as a part of daily life. In conjunction with the opening of the MRT Wenshan-Neihu Line, a regional bicycling network has been planned in the Miramar area in Dazhi to facilitate commuter cycling to MRT stations, as well as for recreational riding. The bike lanes here extend about 1.35 kilometers on both sides of the roads, measure two meters wide, and are marked with a green color.

The Dunhua Bike Lane passes through the center of Taipei City along a north-south arterial, forming a cross-shaped network with the Renai Road Bike Lane. In future, the network will be expanded with two additional north-south bike lanes: the Nanjing East Road Bike Lane along the MRT Songshan Line and the Xinyi Road Bike Lane along the MRT Xinyi Line. The entire network opened to the public in September 2009. However, due to a lack of public consensus over how bike lanes should be established, the Dunhua Bike Lane temporarily converted to a flexible time management system on April 12, 2010. Under this system, cars and motorcycles can use the bike lanes during the morning commute peak hours, while the lanes are restricted to bicycle use only on weekends.



Taipei Bus Station



Transportation information for the Taipei International Flora Expo area

In December 2009, the Water Park under the Taipei Water Department began to carry out the Gongguan Riverside Bikeway Network Plan. In 2010, the plan was extended to the Treasure Hill community and then further expanded to include the bicycle loop route and Hakka Park. Bicycle guide signs were also installed to further improve the quality of the bicycle route network.



Songzhi Road Bike Lane in Xinyi District.

In addition, bike lanes about 1.7 meters wide have been established on sections of refurbished roads along the MRT Xinyi Line, Songshan Line and Xinzhuang Line. There are also plans to connect routes between riverside evacuation gates to dike interior roads to provide riders with a safe home-to-work cycling environment via riverside paths.

As of the end of 2010, Taipei City had a total of 34 kilometers bike lanes and 86.2 kilometers of shared pedestrian and bicycle roadways, for a total of 120.2 kilometers.

Part 2 Smart E-Life

1. ATIS Web

The Taipei City ATIS Web integrates the functions of various intelligent transportation system (ITS) plans on a single website. Traffic monitoring, bus movement and remaining time to stops, and other real-time data are available through the site for one-stop access to a full range of traffic information. The website also posts recent news from the Taipei City Department of Transportation website, real-time bus information and route lookup, route planning, parking lot space



ATIS Web.

availability, road conditions, TRA and THSR train schedules, flight arrival and departure times, YouBike (bicycle rental system) information, and other information, such as road speed, changeable message signs (CMS), roadside monitoring images, national highway travel time, accident-prone intersections in Taipei City, travel themes, and weather. The website can also be accessed in mobile phone and PDA versions, making traffic information available to the public anywhere and anytime. At the end of 2008, the site added a customization function that allows users with registered accounts to compile information on specific routes of interest to make this data quickly accessible. Users can sign up for information updates on bus movement, abnormal road conditions, and traffic congestion. The system proactively emails users about road condition advisories and other related information. By the end of 2010, the site had attracted 600,000 visitors. The Taipei City Government will continue to progressively update the website to make it even more user-friendly and attract more visitors.

2. Taipei e-Bus System

The Taipei City Public Transportation Office established the Taipei e-Bus System to provide the public with convenient access to bus information. The site combines intelligent transportation system (ITS) technology, such as global positioning systems and wireless community systems, with new communication technology. It also integrates information with other means of public transportation to make traditional bus services more modern and user-friendly.

With the aid of intelligent bus stops, riders can access real-time information on the location and estimated arrival time of a bus. They can also get information on bus position by phone, internet, or PDA to reduce waiting time and greatly minimize the chance of missing a bus. The Taipei e-Bus System also can improve bus service efficiency by helping operators to monitor and more effectively deploy their fleets to reduce operating losses.

In December 2009, the Taipei Joint Bus System completed the city-wide establishment of the city-wide Taipei e-Bus System. The service will be expanded and improved. It will also be integrated in future with New Taipei City, Taipei City and highway passenger bus positioning systems. The integrated system will provide the public with more reliable and complete information on bus positions. The Taipei City Government also aims to increase ridership and rider satisfaction through stronger promotion of this convenient service.



New bus stop signs display arrival times.

3. Taipei Parking Information System

The Taipei Parking Information System was established to provide the public with more useful information on off-road parking, including directions to parking lots and information on how many parking spaces are available. The system aims to reduce the time drivers spend looking for parking spots and thereby also reduce traffic congestion and traffic load, while also improving the quality of the urban environment.

The system was launched in 2009 and by the end of 2010 had been installed at 129 parking lots in Taipei. In future, the system will be expanded to all 12 of the city's administrative districts. The system will also be fully integrated with the Taipei City Traffic Engineering Office's changeable message sign (CMS) system so real-time parking and traffic information can be displayed at CMS points. This will improve transportation overall, upgrade the quality of road services, and bring parking policy into the e-generation.



Parking information sign at the intersection of Jilong Road and Tingzhou Street.

4. Easy Going to the Taipei Flora Expo

The 2010 Taipei International Flora Expo kicked off on November 6, 2010. On October 8, the Taipei

City Government launched a free downloadable smart phone application called "Flora Expo Travel" (iPhone and Android versions available) to provide people with expo-related traffic information and guidance on transportation means to the expo venue. The application was downloaded by over 20,000 people within just a week of its release and has since received high marks from users. With the application, anyone with an internet-enabled handset can access a wide array of traffic information anytime and anywhere, putting all of the information needed for a seamless expo trip literally in your hand!

For people without smart phones, the Taipei City Department of Transportation also has added a "Flora Expo" section to the Taipei City ATIS Web, with mobile phone/PDA versions providing the same real-time traffic information.



The downloadable "Go Flora Expo" smart phone application.

Part 3 Customer-based Transportation Services

1. Establishment of the Taipei Neighborhood Highway Regulatory Station

The Taipei City Department of Transportation established the Taipei Neighborhood Highway Regulatory Station to promote agency collection of fuel fees, fuel fee fines, compulsory insurance fines, and other fees by the Taipei City Vehicle Inspection Agency. The department also is extending single-window services for fee inquiries, bill reissuance, and fee payment through convenience stores to fully utilize the extensive store networks and 24-hour services of such chains. In addition, the department is utilizing the unified services by inspection agencies, as well as contracting operations related to traffic violation fines, automobile and motorcycle driver's license replacement, renewal and issuance, fuel fees, fuel fee fines, compulsory insurance fines, and other operations to agents so as to take advantage of their advanced IT and convenient service points.

With the launch of the Taipei Neighborhood Highway Regulatory Station, drivers can pay various highway supervision fees (fuel fees, fuel fee fines, and compulsory insurance fines), replace or renew driver licenses, and pay traffic violation fines at any 7-Eleven, FamilyMart, or HiLife convenience store chain or inspection agency. As a result, drivers no longer need to waste the time and money spent on running to the Motor Vehicle Office due to lack of funds or to pay delinquent fines.

On January 1, 2010, the Taipei Motor Vehicles Office fully implemented a compulsory system for



Convenience store processing of license renewal fees.



Press conference for the 2010 Bus Courtesy Campaign.

agency handling of fuel fees by convenience stores and inspection agencies. By the end of that year, those channels had handled a total of 175,590 payments for fuel fees (including violation fines) and compulsory insurance fines, for a total amount of NT\$998,020,316. This has greatly improved the convenience of fee payment, while also reducing the administrative costs and increasing the work efficiency of the Taipei City Government.

2. Bus Courtesy Campaign

The Taipei City Bus Courtesy Campaign has been jointly promoted for three years by the Jing Chuan Child Safety Foundation, the Taipei Joint Bus System Management Committee and the Taipei City Public Transportation Office. In July 2010, a series of activities was held under the campaign. The “Little Heart Card” activity, which encouraged riders to write thank you cards to bus drivers, attracted 2,500 participants. A total of 450 people participated in a campaign essay contest and 778 children took part in a driver thank you drawing contest. The activity not only helped to cheer up bus drivers, but also encouraged drivers to provide more professional and dedicated service with a smile, while also fostering the concepts of yielding seats to the elderly and disadvantaged, as well as the spirit of mutual courtesy among different vehicle types.

In 2010, the public submitted 680 responses to the bus driver service excellence program, up 98 responses from the 582 responses received in 2009. This indicates that the Bus Courtesy Campaign has had a considerable effect on improving the service attitude of Taipei Joint Bus Service drivers, as well as encouraging riders to greet the driver when getting on or off the bus, to yield seats, and to thank drivers so as to create a warm and friendly riding environment.

3. Traffic Violation Appeals System

In order to diversify channels for public appeals and make appeals procedures more open, the Traffic Adjudication Office, Taipei City Government officially launched an appeals application system on December 1, 2009. The system integrates road violation data and collects information from document retrieval systems. It also has checking and follow-up functions to remind persons in charge of case progress, and it provides an appeals query page to help the public conveniently check on the progress of an appeals case.

Drivers can also go to the Traffic Adjudication Office website, enter their vehicle license plate number, identification number, and violation ticket number to check on the progress of a traffic violation appeal or

read messages from persons handling the case. The service provides a smooth and procedurally transparent inquiry channel for case appeal and handling. As of the end of 2010, a total of 8,733 people had made inquiries through the site.

4. Call Centers

The most common transportation-related questions and inquiries made by the public concern the payment of parking tickets and traffic violation tickets, vehicle registration, plate cancellation, vehicle examination, transfer of vehicle ownership, and driver's license renewal, testing and receipt. In order to reduce the inconvenience of looking for the correct service window, the Taipei City Government established a customer-oriented service for traffic violation fines based on customer service concepts from the corporate sector.

The Taipei City Department of Transportation has established call centers at the Motor Vehicles Office, the Parking Management and Development Office, and the Traffic Adjudication Office, with a link to the Taipei City Government's "1999 Citizen Hotline". The department also has selected several senior personnel to undergo specialized training to provide the public with the best and most accurate dedicated real-time service. According to statistics, the service handles about 3,000 calls per day and has been favorably appraised by the public. The service has greatly improved the efficiency of resolving the public's difficulties, while realizing the ideal of "one-call service."



Call center.

Part 4 Barrier-free Travel Environment

1. Transportation Improvements at Taipei Main Station

Taipei Main Station is the busiest transportation hub in Taipei and an important railway and highway portal to the city. For a long time, however, taxi lines on the east and west roads by the station have led to traffic snarls that affect the smooth movement of travelers and pedestrians. In recent years, however, planning and amelioration efforts spearheaded by the Taipei City Department of Transportation and Taiwan Railways Administration under the Ministry of Transportation and Communications have given this area a brand new feel with refreshing changes that have greatly improved the flow of pedestrian and vehicle movement.

The traffic improvements at the Taipei Main Station area consist of three major types: addressing the taxi line problem, improving pedestrian signage, and adjusting bus routes in the station area.

To resolve the taxi line problem, the Taipei City Department of Transportation moved the taxi waiting area from the ground-level area by the East 3 entrance to an underground waiting area at the underground parking lot on the west side of the station. Improvements to pedestrian signage at Taipei Main Station, now ongoing, will provide clearer and more accurate directions to pedestrians at the station area. The opening of the Taipei Bus Station is leading the Taipei Main Station area into a new era of development. Therefore, a comprehensive review and improvement plan has been formulated for the Taipei Main Station area. Moreover, the city and central government have jointly established a Taipei Main Station Overall Transportation Improvement Task Force to conduct a comprehensive and systematic review to improve traffic order around Taipei Main Station. The improvements will give priority to pedestrians first,



After Improvements: Taxi lines at the west side of the station have been moved underground.

public transportation second, and private vehicles third so as to provide the public with even higher quality transportation services.

2. Bus Stop Sign Renewal

In order to improve the city landscape, reduce the number of roadside signs, and improve the readability of current bus sign route maps, the old bus signs in Taipei City are being replaced with flagpole-style and centralized signs. On the flagpole signs, the sign surface has been made smaller by moving the route map to the sign pole. Each of the tubular poles can display four route maps. The poles are made of stainless steel with reinforcing plates that can spin for easier reading. The centralized signs have a lightbox design and can be connected to a power source. Each sign can display six route maps. The obverse side also can be used to display route guides or public service advertisements. The new signs show the bus stop name, routes served, and bus direction and terminal stops in both Chinese and English. In addition, six major stops for each route are listed in English for foreign visitors. In 2010, a total of 2,233 bus stop signs were replaced in Taipei and all signs in major city areas are expected to be replaced by the end of 2011. The new signs will replace the total number of bus stop signs from the original 5,800 to around 3,000, creating a more comfortable bus waiting and walking environment.



Flagpole-style intelligent bus stop sign.

3. Pedestrian Right of Way Campaign

Taipei City designated 2010 as “Pedestrian Right of Way” year. Over the year, the city carried out a pedestrian right of way campaign on four levels—enforcement, education, promotion, and engineering—to encourage drivers to respect pedestrian road rights, promote the concept of pedestrian right of way, and firmly infuse such concepts in driver behavior and habits to establish a high-quality driving culture and create a more friendly city environment. On the enforcement level, the city stepped up policing of violations of pedestrian right of way and pedestrian rules. As for education, the city enhanced traffic safety education at schools at various levels and arranged over 10 safe-driving classes that were taught by professional drivers and attracted 894 participants. The promotional level involved participation in various outdoor promotional activities held by the Taipei City Government, the arrangement of a touring activity to promote traffic safety, the production of pamphlets, short videos and other materials on pedestrian right of way, and the inclusion of pedestrian right of way questions in safe driving and road safety classes and written test question databases. On the engineering level, worn down intersection crosswalk lines were re-painted, and the lengths of pedestrian crossing green lights in school areas were adjusted for certain times to provide a more barrier-free transportation space.



Pedestrian right of way promotion.

The Taipei City Department of Transportation also coordinated with the Ministry of Transportation and Communications on a pedestrian right of way demonstration area campaign in the Xinyi Planning District during the months from July to September in 2010. This activity tapped private resources to produce fluorescent signs reminding drivers to watch out for children and respect pedestrian priority, reflective signs at the back of buses, reflective crosswalk lines, and fluorescent vehicle-pedestrian barriers. Reflective



A different kind of green-light pedestrian figure puts on a show.

vests were also provided to volunteer crossing guards, guides, attendants at parking lots in the Xinyi Planning District vicinity, and other transportation assistance personnel to increase their visibility and safety.

The Taipei City Government will continue to establish a humanistic transportation environment, make the concept of pedestrian right of way a part of the high-quality driving culture in the city, and create a friendly city for pedestrian priority and safety.

4. Low-floor Buses

Sustainable development, green transportation, and public transportation are among the guiding development trends in cities across the globe. With the aging of society, and the need to meet the transportation needs of the disabled, the Taipei City Government not only has been adjusting the public transportation system, but also is dedicated to creating transportation facilities accessible to everyone. With this in mind, the city government completed the replacement of 357 buses on 15 major arterial routes with low-floor buses in 2009.

Low-floor buses have interior floors less than 35 centimeters from the ground, as well as entry ramps and can incline to one side for easier, safer and more efficient boarding and exiting.

The bus cabins are stair-free and have one to two barrier-free wheelchair spots with safety belts and other design touches to provide a friendlier and more comfortable riding space for wheelchair users. The buses also meet strict environmental protection standards, reducing exhaust, saving energy and cutting carbon emissions. In line with the promotion of a barrier-free transportation environment, the Taipei City Public Transportation Office also asks bus operators to strengthen driver training regarding stopping close to curbs and helping disabled passengers to board and exit the bus as well as to upgrade the overall level of bus services.

As of the end of 2010, 602 low-floor buses were in service in Taipei. Moreover, in conjunction with the Flora Expo, the Taipei City Government has added 60 hybrid low-floor buses to transport expo visitors. The city government also will continue to promote the use of low-floor buses and other barrier-free means of transportation.



A hybrid low-floor bus

Table 1: Low-floor Bus and Hybrid Low-floor Routes Introduced from 2007 to 2010

Route	No. of Buses	Route	Operator	Start Date
Zhongxiao New Main Line	20	Taipei Main Station–Nangang Exhibition Hall	Chung Shing, Kuang-Hua	2008.03.05
Xinyi New Main Line 22	22	Hengyang Road -Kunyang MRT Station	Capital	2008.06.11
BR9 Nanjing New Main Line	25	Donghu–Traffic Circle	Capital	2008.06.11
518 Minsheng New Main Line	33	MacArthur Housing Complex–Traffic Circle	Capital	2008.12.12
72 Songjiang Road New Main Line	20	Dazhi–Linguang MRT Station	Kuang-Hua	2009.04.13
902 Dunhua New Main Line	30	Veteran's General Hospital–Wanfang Community	Zhinan	2009.04.13
220 Zhongshan New Main Line	30	Tianmu–Hengyang Road	Kuang-Hua	2009.04.13
R32 Minsheng Main Line	21	Nangang–Taipei Bridge	Capital	2009.05.15
205 Bade New Main Line	20	China University of Science and Technology–Dongyuan	Taipei	2009.07.15
282 Nanjing–Guangfu Main Line	30	Taipei Zoo–Traffic Circle	Zhinan	2009.08.24
280 Songjiang–Xinsheng Main Line	21	Tianmu–Gongguan	Chung Hsing	2009.08.31
21 Neihu Road Main Line	35	Donghu –Taipei Bridge	Capital	2009.09.04
206-Yanping New Main Line	20	Tianmu–Zhonghua Road	Kuang-Hua	2009.11.19
204	33	MacArthur Housing Complex–Dongyuan	Capital	2009.12.28
280 (Straight)	6	Tianmu–Gongguan	Chung Hsing	2010.03.12
Songjiang Main Line	3			
R30	5	National Palace Museum–Taiwan Science Education Center	Chung Hsing	2010.05.26
266	35	Xinbeitou –City Hall MRT Station	Danan	2010.09.06 2010.10.18
620	20	Taiwan Science Education Center–CUST	Kuang-Hua	2010.09.16
1	18	Huaijiang –Wuxing Street	Shin-Shin	2010.09.17
630	20	Dongyuan –Donghu	Shin-Shin	2010.09.17
R7	9	Jiantan MRT Station–Shezi	Capital	2010.10.04
645	15	Jiuzhuang–Veterans General Hospital	Sanchung	2010.10.14
R2	18	Beifeng Village–Yuanshan MRT Station	Kuang-Hua	2010.12.07
Flora Expo Route (Hybrid Bus)	10		Capital	2010.10.09
Flora Expo Route 1 (Hybrid Bus)	20		Capital	2010.10.09
Flora Expo Route 2 (Hybrid Bus)	30		Capital	2010.10.09
214	3	Zhonghe-Neihu	Chung Hsing	2010.11.22
Total	572			

Note: The former Public Transportation Office also purchased 30 low-floor buses which it leased after its privatization to the Metropolitan Transport Bus Corporation, which has deployed these on 13 routes.

5. International Car-Free Day in Metropolitan Taipei

In line with the “Travel Smarter, Live Better” theme of 2010 International Car-Free Day, Taipei City held the “2010 International Car-Free Day in Metropolitan Taipei” activity under the theme of “Car-Free and Happy” from August 6 to October 3, 2010. During this period, city residents were encouraged to refrain from driving one day a week to “save energy, reduce carbon emissions, and be happy.” Residents were also invited to sign a Car-Free acknowledgement and, in conjunction with the “5284” system (the four numbers in Chinese sound like “I Love the Bus”) promote Car-Free Day involvement as a part of daily life. This activity relied entirely on city residents' self-initiative to promote and create a “Car-Free, No Trouble” image in Taipei City. The 5284 contest was even recognized and reported by the World Carfree Day Network. In a telephone survey, about 81.8% of the residents said they supported the activity and commuted by public transportation or bicycle one day a week instead of driving. This result proves the success of the activity in getting the public to understand and act in the spirit of Car-Free Day. In addition, through the activity promotion and improvements to the public transportation system, public transportation ridership has steadily increased. In 2010, the number of people taking public transportation increased by 46,000 riders over the same period the year before, showing that the Car-Free Day activity has had a positive impact in promoting and encouraging more people to use public transportation.

Part 5 Fast Track to a Revitalized City

1. Rapid and Convenient MRT Network

The Taipei MRT Luzhou Line began operation on November 3, 2010. This is the second MRT line to cross the Danshui River and represents a major stride forward in unifying the Metropolitan Taipei area as a single living circle. Currently the Taipei Metropolitan Area MRT System comprises nine lines: the Wenshan-Neihu Line, Danshui Line, Zhonghe Line, Xindian Line, Nangang Line, Banqiao Line, Tucheng Line, Xiaonanmen Branch Line, and Luzhou Line. The combined route extends 100.8 kilometers (or 105.4 kilometers including total length constructed) and has 93 stations. In 2010, the following major MRT development projects were carried out:

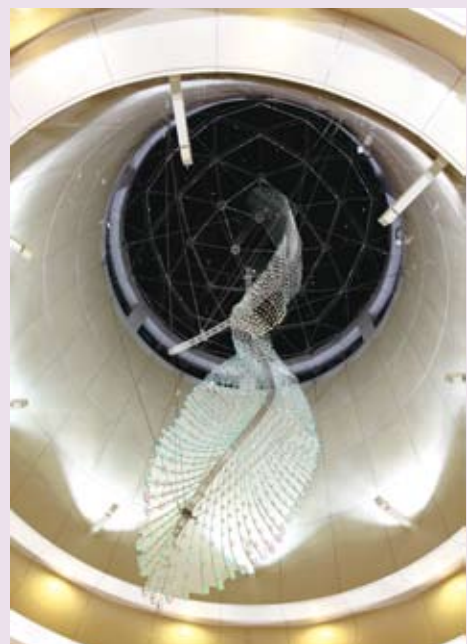
(1) MRT Initial Phase Network (Neihu Line Construction)

The Neihu Line officially began operation on July 4, 2009, and is now undergoing initial operation adjustments to improve system stability. On May 9, 2010, the refurbishment and testing of the 51 married pair electric multiple units (EMUs) on the Muzha Line was completed. A Safety Inspection Committee completed stability testing and safety checks of the new EMUs on November 8, and the cars subsequently went into service on December 26.

(2) Xinzhuang Line and Luzhou Branch Line Construction

Initial and follow-up inspection of the Xinzhuang Line and Luzhou Branch Line construction was completed on October 31, 2010 and trial service on the lines began on November 3. At the end of 2010, work on the lines was 94.17% complete.

(3) East Extension of the Nangang Line



A night scene of the Feather Dance installation at MRT Luzhou Station.

The east extension of the Nangang Line was 99.98% completed by the end of 2010. The line extends east from the intersection of Xiangyang Road and Zhongxiao East Road at the east side of Kunyang Station, tunnels past the south side of the TRA Nangang Freight Yard, and continues to Nangang Station. It then heads in a northeasterly direction to link with the joint development section of the Nangang railway undergrounding project of the Railway Reconstruction Bureau under the Ministry of Transportation and Communications. The line then continues along the north side of the rail track to Nangang Exhibition Hall Station at the lower side of Nanxi Greens (at the intersection of Academia Road and Nangang Road). The line is 2.5 kilometers long and has two underground stations: Nangang Station and Nangang Exhibition Hall Station.

(4) Xinyi Line

The Xinyi Line was 60.29% completed at the end of 2010. The line heads east from the east side of Dongmen Station (R10/O14) and follows along Xinyi Road Section 4 and Section 5 to the Xiangshan Station (R05) and track end at the intersection of Xinyi Road and Songyong Road. The line is 6.4 kilometers long and has seven underground stations. The World Trade Center Station (R06) was built at the same time as the construction of Taipei 101. Construction of the station's diaphragm wall, relocation of pipelines on the north side, and other work is now underway at the station.

(5) Songshan Line

The Songshan Line was 52.14% complete at the end of 2010. The line extends from Ximen and passes Zhonghua Road, Tacheng Street, Nanjing West Road, and Nanjing East Road to Nansongshan. The line is about 8.5 kilometers long and has eight stations (including Ximen Station). The high-volume line is also completely underground.

(6) Downtown Taipei Section of the Taiwan Taoyuan International Airport MRT Line

This section is about 4 kilometers long. At the end of 2010, the Airport Line was 47.52% completed.

(7) Dingpu Extension on the MRT Tucheng Line

The Dingpu Extension on the MRT Tucheng Line is 2 kilometers long and was 26.02% complete at the end of 2010. The extension is being developed under the Taipei MRT plan to meet transportation needs in the Dingpu area and industrial zones in the Tucheng vicinity. The project is also coordinated with the Executive Yuan approved Dingpu High-tech Industrial Park development plan in Tucheng. The extension



Aerial view of the MRT Nangang Exhibition Hall Station on the Nangang Eastern Extension.



A suspended light tower display at MRT Da'an Park Station on the Xinyi Line.



Groundwork for the P64 tower column on the MRT Airport Line.

runs west from the south end of Yongning Station on the Tucheng Line along Zhongyang Road Section 3 and Section 4 to the Dingpu High-tech Industrial Park in Tucheng. The line has one underground station (including a traction power substation), a crossover, a 1,529-meter-long shield tunnel, and five cross passages.

(8) MRT Circular Line Phase I

The MRT Circular Line Phase I extends 15.4 kilometers from Dapinglin Station on the Xindian Line to the Wugu Industrial Park in Xinzhuang. Although most of the line is located in New Taipei City, the New Taipei City Government agreed to let Taipei City construct the line in consideration of city cooperation, unified usage rights, construction quality, and interface integration. Bid invitation work for the civil engineering, water system, elevator/escalator construction, and other detailed designs of the line began in 2007. At the end of 2010, the Circular Line was 19.86% completed.

(9) Ongoing Plans for the Taipei MRT Network

MRT lines now in the planning phase include the Wanda-Zhonghe-Shulin Line, the Xinyi Line East Extension, the MRT North-South Line, and the Minsheng-Xizhi Line.

2. Refining MRT Operation and Management Services

On April 22, 2010, the Taipei MRT System crossed the 4-billion-rider mark. The increase from three billion to four billion riders took only two years and two months, or just one-third of the time required to hit the first one billion mark (six years after the system was launched in 1996). This achievement shows that ridership is growing steadily faster as the MRT system expands. In 2010, the Luzhou Line carried over 500 million riders. By crossing this mark, the Taipei MRT will have an opportunity to upgrade from the Nova International Railway Benchmarking Group (Nova) to the Community of Metros (CoMET). Membership in CoMET will allow Taipei to engage in technical exchanges with the metro systems of New York, London, Paris, Moscow, and other international cities.

In order to celebrate the opening of the new line and encourage public transportation use during the Flora Expo, the Luzhou Line provided free service for a month (November 3 to December 2, 2010).

In conjunction with the Taipei metro area New Year's Eve activity, the MRT system was open for 43 continuous hours of service starting on December 31, 2010, to provide the public with more attentive and uninterrupted service. In the 24-hour period from 6:00 a.m. on December 31, 2010, the system carried 2.5 million riders, up 330,000 riders from the same period the year before and marking a new record high.

(1) Improving MRT System Safety

A. Rising stability on the MRT Wenshan-Neihu Line

The Wenshan-Neihu Line came into service on July 4, 2009; however, the system was relatively unstable in the initial operating period. The Taipei Rapid Transit Corporation actively coordinated with the Department of Rapid Transit Systems of the Taipei City Government and system companies to carry out steady improvements to the line facilities and equipment. Much of the software and hardware was renewed and upgraded, the network was optimized, a second UPS

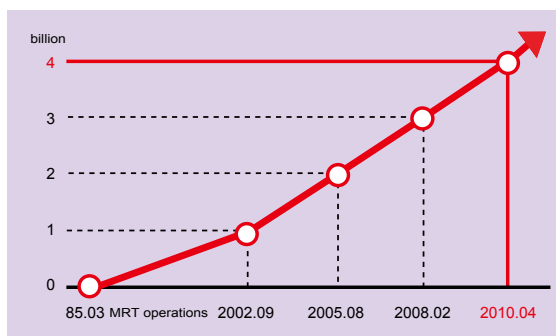


Figure 2: Accumulated Ridership on the Taipei MRT System

system was added and brought online, and a new gigabit Ethernet (DE) system was installed. These improvements have greatly increased system stability. A technical report, a system operation reliability management project, and other controls indicate that operations on the Wenshan-Neihu Line are becoming increasingly stable. Furthermore, the line has scored high on an internationally adopted benchmark of reliability-mean car-km between incidents. In 2010, the line had 1,324,000 mean car-km between incidents—a level that the Muzha Line reached only in its eighth year of service (2003).

B. Addition of Platform Gates at Yuanshan Station, Taipei City Hall Station, and Sun Yat-sen Memorial Hall Station

In order to prevent crowding-related incidents at MRT stations, platform gates were added to the three main transfer stations for the Danshui Line (Taipei Main Station), Nangang Line (Taipei Main Station) and Zhongxiao Fuxing Station in 2006. In August 2010, additional platform gates were installed at Yuanshan Station, Taipei City Hall Station, and Sun Yat-sen Memorial Hall Station to provide riders with a safer and more reliable waiting environment.

C. Addition of Non-slip Facilities at MRT Stations

Non-slip facilities were installed in all operating MRT stations and underground metro malls in 2010 to clearly mark stairs for the seeing impaired and elderly and increase the safety of stair usage.

(2) Improved Service Quality

A. Enhancing the Artistic Ambiance of the MRT System

The Taipei MRT system is adorned with contemporary art works and planned overall with public art in mind. From April 2010, the MRT line park between Zhongshan MRT Station and the Museum of Contemporary Art and the R4 Exit of the Zhongshan Metro Mall were given a fresh new look as an art path and art park integrated with local culture and business characteristics, creating a family-friendly spot to slow down in the city.

Apart from transportation convenience, the MRT Luzhou Line has infused cultural characteristics of the areas along the line in the station design and public art. For example, the wall mural "Peace and Prosperity" at Xingtian Temple Station depicts prayer vessels and the face masks of the evil-dispelling "Eight Generals" to convey the theme of protecting the nation. The work has a deeply local sensibility and meaning and embodies the uniqueness of the public art in the station architecture.

B. Attentive Service Measures

Seating in the first and sixth cars of high-volume trains with stable bicycle volume was rearranged to make the MRT more convenient for passengers with bicycles. Since April 24, 2010, bicycles have been allowed on the MRT all day on weekends and national holidays to meet the



Newly added platform gates at Yuanshan Station.



Art at MRT Xingtian Temple Station: Peace and Prosperity.



Hand poles in MRT cars are coated with reflective rubber.

demand of passengers with bicycles.

In order to provide nursing mothers with a more convenient breast-feeding environment, four breast-feeding rooms were installed at the Taipei City Hall Station, Nangang Station, Ximen Station, and Jiantan Station in October 2010.

In 2010, all high-volume EMUs on the MRT system were fitted with hand poles. The poles were coated with reflective rubber, on a trial basis, to increase contrast with the background, serve alerting and anti-slip functions, and help prevent passengers from hitting the poles.

C. Installation of Trackside Sound Insulation Walls

In order to improve the living quality in areas by the ground level and raised sections of the MRT system, sound insulating walls have been progressively added to these track sections. By the end of 2010, such walls had been installed on 22,679 meters of track. Moreover, residents of station areas, community development associations, students, and other groups have been invited to visit MRT stations under a station open-house program launched in 2004. The guided visits aim to familiarize the public with station emergency escape routes, signage, fire fighting and safety equipment, and evacuation procedures.

Conclusion

A rapid and convenient transportation environment is an essential requirement in any advanced city. In past years, the Taipei City Government has dedicated efforts to building the hardware of the city's transportation system, including through the steady development of the MRT system and adjustments to bus routes, to progressively perfect the city's public transportation network. In more recent years, the Taipei City Department of Transportation has therefore committed more effort to the "software" side aspect of transportation. The department has been working to improve the quality of transportation services from its bus courtesy campaign, student walk-to-school improvement plans, high-quality MRT operation and management services, and other high-quality services. These and other initiatives are shifting the focus of transportation development in Taipei from quantitative improvements to qualitative upgrading and optimization with an aim to steadily create a new transportation environment for a more green and friendly city.