



Advancement of the Taipei MRT Brings Easy Travel and Greater Prosperity

2014 was a year to celebrate for the Taipei MRT. Following the inauguration of the Xinyi Line in 2013, the Songshan Line filled in the last missing piece of the downtown Taipei MRT network when it opened to the public on November 15, 2014. The Taipei MRT consists of several L-shaped routes that connect in a grid-shaped network downtown and expand into surrounding suburban areas. By ushering in a new transportation era, the Taipei MRT has brought greater prosperity to the Taipei metropolitan area by allowing residents to realize their dream of a world-class metro service.

Nearly 40 years have passed since planning of the Taipei MRT was launched in 1975. Currently, the system carries an average of 2 million passenger trips per day. It is hard to imagine Taipei without the MRT – this would mean another 2 million trips made daily using other transportation modes, such as private cars, scooters, bikes, buses, etc. The air and noise pollution would severely impact everyday life. With the Taipei MRT, the public greatly benefits from a safe, convenient, and rapid transit service.

The Taipei MRT, Taiwan's first metro system, brings the city's development into line with great international metropolises such as New York, London, Paris, and Tokyo. Its foundation of cultivation, rebirth, creation, and technology has left a profound historic imprint.



Network Expansion Brings Record Traffic Volume

The inauguration of the Muzha Line, the first medium-capacity transit system of the Taipei MRT, on March 28, 1996, introduced a new transportation experience to the general public. The Muzha Line ushered in a new chapter of the nation's transportation industry and rapid expansion of living space. Upon the opening of the Songshan Line on November 15, 2014, the Taipei MRT network grew to 134.6 kilometers in length (129.2 kilometers of which is operational) and 116 stations.

Rapid growth in ridership has accompanied the rapid expansion of service. When the Muzha Line opened in 1996, it carried approximately 40,000 passenger trips per day. As new routes were completed, daily ridership grew, reaching an average of 1.867 million passenger trips in October 2014. After the opening of the Songshan Line, average daily ridership surpassed the 2-million mark (reaching 2.098 million in December 2014). According to Taipei Rapid Transit Corporation (TRTC) statistics, accumulated traffic volume at the end of 2014 was 6.798 billion passenger.

A New MRT Line Every Year to Connect Urban Transport Arteries

Each individual MRT line varies in planning, design, construction, and public issues, causing a variety of challenges for construction teams. When MRT construction began, a lack of domestic experience led the Department of Rapid Transport Systems (DORTS) to depend on overseas expertise. In accordance with urban development and transport corridor demand, several L-shaped routes were planned in the shape of a downtown grid-shaped network. Since independent routes were not able to create as many benefits as a network, DORTS launched six routes simultaneously. Following the completion of two double-cross routes in downtown Taipei, the Bannan Line was extended to Nangang and Banqiao on December 25, 2008; the Wenhua Line was completed in 2009; the Zhonghe-Xinlu Line was extended to the Luzhou, Sanchong, and Xinzhuang areas between 2010 and 2012; and the Xinyi and Songshan Lines opened in 2013 and 2014, respectively. Currently, three north-south and three east-west lines form a comprehensive grid-shaped network. A major administrative goal of Taipei Mayor Hau Lung-bin was achieved – the opening of one MRT line each year.



The artwork "Winding River, Flourishing Flowers, Dome of Lights" at the Songshan Line's Songshan Station



Taipei Nangang Exhibition Center Station on the Wenhua Line



For future MRT projects, categorized together as Stage 2, the DORTS is implementing design and construction of the Tucheng extension to Dingpu, a section of the Taiwan Taoyuan International Airport Line in Taipei from Sanchong to Taipei Main Station, Phase I of the Circular Line, Phase I of the Wanda-Zhonghe-Shulin Line, and the eastern extensions of the Xinyi Line. To meet strong demand for MRT service among residents in farther areas, the DORTS has continued to plan more routes in line with regional development and public suggestions. Currently, feasibility studies and comprehensive planning reports are underway for the Minsheng-Xizhi Line, the north and south sections of the Circular Line, the Sanying Line, the Ankeng Line, the North-South Line, and the Shezi-Shilin-Beitou light rail transit network. After the reports and financing receive approval from the central government, construction will begin.


The Birth of a New MRT Line Involves Conflict and Encouragement, Technology and Beauty, and Anticipation

Constructing an MRT line is full of difficulties and challenges. It requires constant communication and coordination with the public and other government agencies to gain their support and assistance. Through mutual effort and professional expertise, the construction teams responsible for the Taipei MRT overcame numerous unexpected challenges as they completed one line after another. By integrating technology and aesthetics, the MRT serves not only as a convenient transportation system but also as an integral part of everyday life, urban development, and international tourism.

Construction of the Taipei MRT combined significant investment, long construction periods, huge traffic volumes, and intricate underground utility pipelines. As a number of main Taipei MRT lines pass through densely-populated transport corridors, maintaining smooth traffic flow to minimize inconvenience is critical. Construction of a metro network is more complicated than other public infrastructure projects. Common ducts and environmental renewal were



Public artwork "Spring Light Appears" at the Xinyi Line's Daan Park Station



conducted in conjunction with the construction of the Xinyi and Songshan Lines to avoid repeated excavation, minimize the impact of construction on traffic and the city landscape, and avoid inconveniencing the public. This greatly facilitated pipeline maintenance and boosted the MRT's economic benefits.

Numerous tough challenges were encountered during Taipei MRT construction. Construction of the Xinzhuang and Xinyi Lines involved a total of 5,062 m of two up-and-down tracks for each route and a common duct 820 m in length. The five tunnels intersecting at different levels beneath Hangzhou Road Section 2, coupled with a confined working space, were a first for Taiwan. Construction of the Xinzhuang Line, which started with the launch of three shield tunneling machines through the down-track tunnel on September 15, 2005, and concluded with the assemblage of the last ring, of the up-track tunnel, Ring No.1297, on January 17, 2009, took three years and four months. Another challenge was a 72-meter-deep diaphragm wall (approximately 24 stories tall) at the Jingmei gravel stratum, the deepest diaphragm wall on the Taipei MRT. It was built for the 216-meter-long, 38.5-meter-wide Dongmen Station structure and is one of several public infrastructure records set by the Taipei MRT.

The Taipei MRT Presents Static and Dynamic Beauty While Fostering Birth and Rebirth

Apart from providing the general public with a convenient transportation mode, the Taipei MRT infuses vitality into the city by contributing to an orderly society and a comfortable community activity space. Diverse MRT stations activate the cityscape, and public art brings culture to everyday life. With the development of the MRT network, Taipei has become one of the most livable cities in the world.

Construction of the Taipei MRT was not rigid. Diverse architectural concepts and public art created new images for the city. For example, the majestic dragon boat-shaped roof of Jiantan Station on the Tamsui Line has become a famous landmark. Daan Park Station on the Xinyi Line features the design concept of "MRT, sunshine and forest" by presenting a sunken ecological courtyard, a naturally-lit hall, two light towers, cascades, and pools. Together, these features comprise a cozy leisure environment.

With a majority of MRT routes passing through densely-populated areas, when public land is not available, it is critical to gain support and acquire privately-held land for the establishment of MRT facilities such as stations, entrances/exits and vent shafts. Referring to the experiences of other developed nations, the Ministry of Transportation and Communications incorporated a land development mechanism into the Mass Rapid Transit Act. This mechanism is unprecedented for providing landowners with an alternative choice before expropriation.





The land development mechanism involves a series of procedures: land boundary designation, urban rezoning, and land acquisition. These are followed by investor solicitation, review, construction management, negotiation of rights and interests allocation, and finally executing publicly-owned property operation and management. This mechanism has achieved a multi-win situation among public and private interests while achieving efficient land use. Current achievements include the completion of urban rezoning at 83 construction sites, development on more than 65 hectares of land, and land acquisition savings of NT\$35 billion. Significant benefits such as these have won praise from various sectors.

Implementation of the land development mechanism has not only solved the problem of land acquisition for MRT facilities but also boosted prosperity in areas surrounding the MRT. It has contributed to regional reactivation, a new city landscape, and a rebirth of the city.

The DORTS emphasizes protection of historic relics, such as the former Department of Railways' Taipei Workshop, which also served as the Taiwan Railways Auditorium. The building, located to the northeast of the Songshan Line's Beimen Station, was to be affected by station construction. It was therefore temporarily moved 30 meters southeast along Tacheng Street then returned to its original location following station completion. To allow easy access to this historic landmark, the planned width of Tacheng Street was reduced from 40 to 30 meters and two entrances/exits were merged. After years of effort, the tough mission of relocating this municipal and national heritage site ended in success.



Daan Park Station

Opening of the Songshan Line Leads to New Operation Modes

The Songshan Line, the third east-west route in Taipei, is 8.5 kilometers in length with eight underground stations, six of which serve as transfer stations for other MRT lines and railways. After opening for service, the Songshan Line connected to the Xindian Line, with the two lines distinguished by the color green, and the Tamsui Line connected to the Xinyi Line, with the two lines distinguished by the color red. Their operational modes were reorganized as “Songshan-Xindian” and “Tamsui-Xiangshan.” With the implementation of the new scheme, all MRT lines have designated platforms, making onward travel easier for transfer passengers. Upon inauguration of the Songshan Line, the total number of transfer stations on the Taipei MRT network increased from nine to 12, relieving crowding along certain routes.

With the completion of the MRT Songshan Line, the TRTC assigned numbers 1 through 5 to existing routes according to their order of inauguration. This system makes it easier for visitors to navigate and transfer between lines. The route names, with corresponding number and color, are as follows:

- Wenhua Line (Brown): Line 1, with Taipei Nangang Exhibition Center and Taipei Zoo terminal stations
- Tamsui-Xinyi Line (Red): Line 2, with Tamsui and Xiangshan terminal stations
- Songshan-Xindian Line (Green): Line 3, with Songshan and Xindian terminal stations
- Zhonghe-Xinlu Line (Orange): As the Zhonghe-Xinlu Line forks at Daqiaotou Station, Line 4A refers to the route with Huilong and Nanshijiao terminal stations and Line 4B refers to the route with Luzhou and Nanshijiao terminal stations.
- Bannan Line (Blue): Line 5 with Taipei Nangang Exhibition Center and Yongning terminal stations

Note: Single-stop branch lines (e.g. the Xinbeitou Extension Line and Xiaobitan Extension Line) were not assigned a number.

Upon opening of the Songshan Line, there were significant changes to how the Line was run. To allow passengers to familiarize themselves with new facilities and transfer options in advance, TRTC opened Songjiang Nanjing Station to the public for free visits before inauguration. Passengers were exposed to comprehensive publicity through five modes:



Removal of historic relics at the Songshan Line's Beimen Station



sight and sound, asking and taking brochures, and QR Codes. Further measures taken to familiarize passengers with travel and transfer information included posting billboards at the concourse levels of four transfer stations: Ximen, Zhongshan, Songjiang Nanjing, and Nanjing Fuxing.

The TRTC provided one-month promotional offers from November 15 (Saturday) through December 14 (Sunday). For EasyCard users, no fare was charged on travel between MRT Ximen Station and MRT Songshan Station of the new Songshan line. A 30% discount applied for passengers satisfying both of the following criteria:

- One entry/exit point being Guting, Dingxi, Yongan Market, Jingan, Nanshijiao, Taipower Building, Gongguan, Wanlong, Jingmei, Dapinglin, Qizhang, Xiaobitan, Xindian District Office, or Xindian station
- The other entry/exit point being NTU Hospital, Taipei Main Station, Zhongshan, Shuanglian, Minquan W. Rd., Yuanshan, Jiantan, Shilin, Zhishan, Mingde, Shipai, Qilian, Qiyang, Beitou, Xinbeitou, Fuxinggang, Zhongyi, Guandu, Zhuwei, Hongshulin, or Tamsui station

Regular fares remained on other operational routes. Inauguration of the Songshan Line coupled with this promotional discount scheme allowed passengers to enjoy economical, fast, and convenient MRT rides.

Promoting a Unique MRT Culture

Apart from MRT construction itself, a metro culture has been developed through the efforts of the TRTC and passenger support. There is a common understanding that people should not eat, drink or chew gum when inside the station or on a train, that they should line up and stand on the right side of the escalator, and that they should yield seats to those in need and speak softly on the phone.



MRT service after the opening of the Songshan Line

To express gratitude to all metro riders for their support, the TRTC selected March 28 – the anniversary of the opening of the first MRT line – as a day to observe care and show consideration for others. Through a wide variety of activities, the TRTC hopes that this culture, formed and strengthened during the course of 6.7 billion passenger trips, will be transmitted to every corner of the city. This will create enhanced quality of life and greater well-being.

Public Transportation Modes Contribute to Easy Travel

Offering accessible transfer between MRT routes and other transportation modes – such as buses, railways, high-speed rail systems, and airports – has been a critical issue since the start of MRT station planning. Spatial planning prioritizes shortening the distances traveled and time taken for inner-station transfers and connections. Currently, Taipei Main Station, Banqiao Station, and Nangang Station provide transfers for Taiwan Railways, Taiwan High Speed Rail, and other MRT lines. The Songshan Line's Songshan Station leads to Taiwan Railways' Songshan Station. Beimen Station will lead to the future Taiwan International Airport Line's Taipei Main Station. These convenient transfers contribute to a seamless rail system and provide a user-friendly public transportation environment.

Sustainability, a key characteristic of Taipei's development, requires a user-friendly transportation environment and comprehensive public transportation. The MRT has a central role to play in this, together with the subsidiary bus system and bike paths. Well-planned public transit makes travel between home and destination easy. Once the MRT and bus systems were developed, Taipei City Government launched the YouBike shared bike system, which was expanded to each administrative district in 2013. YouBike has been praised by Taipei residents for providing a convenient transfer service for the first and last legs of their journeys.



The Metro Culture Festival



YouBike stands at an MRT station

