



捷運年刊

2023

DORTS ANNUAL REPORT





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A Word from the Commissioner



Under the blueprint of “Sustainable Inclusion in the Capital of Hope” vision, in 2023 the Taipei team welcomed the anniversary of their inauguration with each department launching various policy plans as a continuation of their existing achievements, enabling the public to deeply grasp the attentive care of the Taipei team. As Commissioner of the Department of Rapid Transit Systems, Taipei City Government (DORTS), I also feel honored to be a member of the team.

To date, 152.3km of MRT construction has been completed in the Taipei Metropolitan Area, and 58.2km of construction projects are currently underway and rapidly catching up with the rest of the network, including Xinyi eastern extension, Wanda line Phase I and Phase II, Circular line north & south section, and Circular line east section. Due to the impact of unfavorable factors domestically and abroad such as the pandemic, labor and material shortages, saturation of the domestic construction volume, and the Russia-Ukraine war, bidding for civil works on Circular line north & south section and Wanda line Phase II failed repeatedly. After DORTS actively invited companies to bid and adjusted the project funding in accordance with market conditions, the process of awarding of contracts was completed for five bids in 2023, demonstrating the government’s determination to promote mass transit construction.

The final piece of the puzzle for the Taipei MRT Circular Line, Circular line east section was approved by the Executive Yuan in March. In order to meet Mayor Chiang’s expectation that the construction commence within two years of approval, detailed design planning tasks are currently underway for the east section, and once tendering documents have been prepared, bidding is expected to be announced in mid-2024. In addition to expanding the scope

of MRT system services, the continuation of MRT system construction in the Taipei Metropolitan Area will also lead to the realization of transportation efficiency.

In cooperation with urban development and to ensure the sustainable operation of the Taipei MRT, the progress of land development is also continually underway. Investor solicitation has been completed for MRT Jincheng Depot, Juguang Station, and Kalah Station with an investment total of NT\$26.3 billion. Moreover, the implementation of open investor solicitations for the following five development sites: Chiang Kai-Shek Memorial Hall Station, Xiaan Station, Zhonghe Station, Liancheng Jinhe Station, and Station Y3 on Circular line south section, have continued to create success stories in public-private partnerships. In addition, in November the column erection ceremony was held for "Taipei Main Station District Parcel C1/D1 (Eastern Part) Land Development Project," which has received a lot of attention from the outside world. Construction is expected to be completed in 2027, further promoting the development of the Taipei Main Station District Parcel. This year, the annual rental income from real estate development reached NT\$1.3 billion, and the funds can henceforth be injected as stable financial resources for sustainable development.

In 2023, during just a single year, MRT team collaborations including Wanda line section contract CQ860, which won an Executive Yuan Public Construction Golden Quality Award, and section contract CQ850A, which won a Taipei City Government Public Works Award of Excellence, along with multiple other award-winning projects won the recognition of people from all walks of life.

In addition to pursuing of construction quality and progress, we also deeply understand that as a part of urban residents' daily lives, the MRT is more than just a means of transportation. In order to create a friendly society

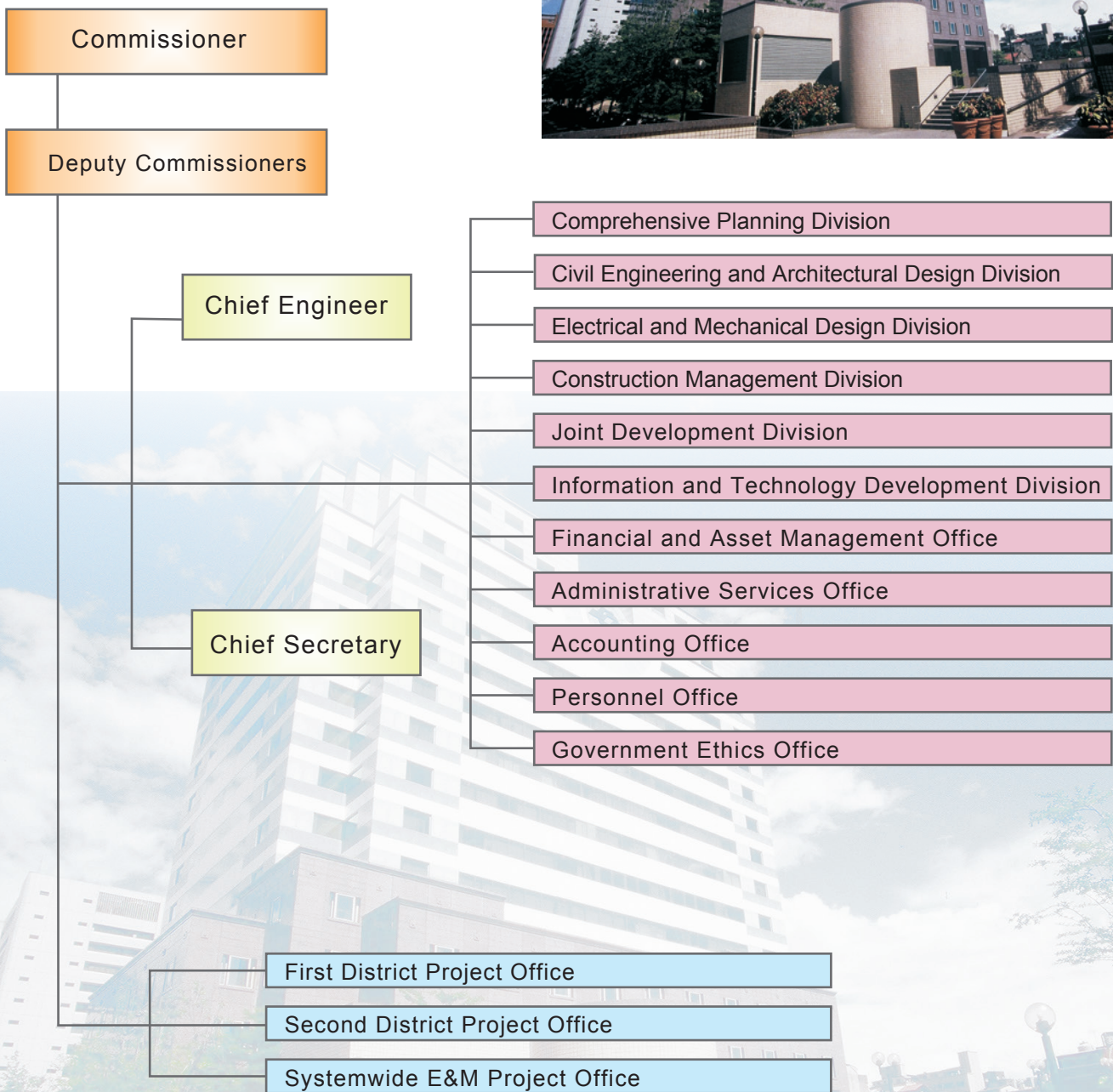
in response to the aging society, we have continually promoted elevator/escalator improvement projects and continued to focus on the welfare of citizens. DORTS has also integrated aesthetic design into MRT construction so that the MRT is no longer merely an urban concrete jungle, but also enables each citizen to have more of a feeling or artistic and humanistic care when riding the MRT.

On the first-year anniversary of his inauguration, Mayor Chiang expressed his hope that citizens will feel that “every step of your life, there is somebody walking together with you.” Next year is the “Year of Traffic Safety” in Taipei City, and DORTS hopes that MRT construction will provide the public with safe, comfortable, and affordable green travel services and reduce the amount of carbon emissions from private vehicles to create a friendly city and work together with citizens to be net-zero by 2050.



Commissioner

Organization Chart



Completed and Inaugurated Routes

(As of December 31, 2023)

Route	Terminal Stations	Total Length (km)	Note
Wenshan Neihu Line	Taipei Zoo Station to Zhongshan Junior High School Station Zhongshan Junior High School Station to Taipei Nangang Exhibition Center Station	10.9 14.8	Inaugurated on March 28, 1996 Inaugurated on July 4, 2009
Tamsui Line	Tamsui Station to Chiang Kai-Shek Memorial Hall	23.8	Section between Tamsui and Zhongshan stations was inaugurated on March 28, 1997 Section between Zhongshan and Taipei Main stations was inaugurated on December 25, 1997 Section between Taipei Main Station and Chiang Kai-Shek Memorial Hall Station was inaugurated on December 24, 1998
Zhonghe Line	Guting Station (excluded) to Nanshijiao Station	5.4	The entire line was inaugurated on December 24, 1998
Xindian Line	Chiang Kai-Shek Memorial Hall (excluded) to Xindian Station	11.2	The entire line was inaugurated on November 11, 1999 (The 1.9-km Xiaobitan branch line was inaugurated on September 29, 2004)
Xiaonanmen Line	Ximen Station to Chiang Kai-Shek Memorial Hall Station	1.6	Inaugurated on August 31, 2000
Nangang Line	Ximen Station to Kunyang Station	11.0	Section between Ximen and Taipei City Hall stations was inaugurated on December 24, 1999. The entire line was inaugurated on December 30, 2000
Banqiao Line	Ximen Station (excluded) to Fuzhong Station	7.1	Section between Ximen and Longshan Temple stations was inaugurated on December 24, 1999 Section between Longshan Temple and Xinpu stations was inaugurated on August 31, 2000 Section between Xinpu and Fuzhong stations was inaugurated on May 31, 2006
Tucheng Line	Fuzhong Station (excluded) to Yongning Station	5.6	The entire line was inaugurated on May 31, 2006
Nangang Eastern Extension	Kunyang Station to Taipei Nangang Exhibition Center Station	2.5	Section between Kunyang and Nangang stations was inaugurated on December 25, 2008 Section between Nangang and Taipei Nangang Exhibition Center stations was inaugurated on February 27, 2011
Luzhou Line	Luzhou Station to Sanchong Elementary School Station	6.4	The entire line was inaugurated on November 3, 2010

Route	Terminal Stations	Total Length (km)	Note
Xinzhuang Line	Taipei City Section: Daqiaotou Station to Zhongxiao Xinsheng Station	6.1	Inaugurated on November 3, 2010
	Zhongxiao Xinsheng Station to Guting Station	2.3	Inaugurated on September 30, 2012
	New Taipei City Section: Daqiaotou Station to Fu Jen University Station	8.2	Inaugurated on January 5, 2012
	Fu Jen University Station to Huilong Station	2.8	Inaugurated on June 29, 2013
	Xinzhuang Depot	0.3	Inaugurated on January 14, 2021
Xinyi Line	Chiang Kai-Shek Memorial Hall Station to Xiangshan Station	6.4	Inaugurated on November 24, 2013
Songshan Line	Ximen Station to Songshan Station	8.5	Inaugurated on November 15, 2014
Tucheng Extension to Dingpu	Yongning Station (excluded) to Dingpu Station	2	Inaugurated on July 6, 2015
Circular Line Phase I	Dapinglin Station to New Taipei Industrial Park Station	15.4	Inaugurated on January 31, 2020
Total		152.3 km	



Taipei Metropolitan Area MRT Map – Future Vision

Constructing a World-Class MRT System for the Taipei Metropolitan Area



Completed MRT Routes

Routes completed for operation include the following six lines: Wenhu, Tamsui-Xinyi, Songshan-Xindian, Zhonghe-Xinlu, Bannan lines and Circular line Phase I with a length of 152.3 km and 131 stations.

Approved MRT Routes under Design and Construction

Approved MRT routes currently being designed and constructed by Taipei City Department of Rapid Transit Systems (DORTS) are the Xinyi eastern extension, Wanda-Zhonghe-Shulin line, Circular line north & south section, and east section which have a total length of 58.2 km and 51 stations. When all routes are completed, the MRT network will reach a total length of 251 km.

Planned MRT Routes

Routes planned for future expansion include Minsheng-Xizhi line, Shezi, Shilin, and Beitou light rail transit network. All construction durations are subject to the central government's approval and assured financial resources. When all routes are completed, the MRT network of Taipei Metropolitan Area will extend to a total length of 275 km (covering Danhai light rail transit, Ankeng light rail transit, and Sanying line responsible by New Taipei City Department of Rapid Transit Systems).

Taipei Metropolitan Area MRT Map – Future Vision

Results and Follow-up Plan for Phase I of the Auto-monitoring and Structure Safety Assessment of the MRT Jiantan Station Rooftop Suspension System

MRT Jiantan Station (the Station) can be rated the most iconic and intricate landmark of Taipei MRT system. However, Tamsui line opened 25 years ago, and the structures require good maintenance. In terms of the full life cycle of the structure, to ensure the suspension and operation safety of the Station, conducting proper inspection, assessment, repair, and maintenance work is crucial.

In particular, for the special structure of the Station rooftop, general maintenance and inspection have been adopted in line with the “Technical Regulations Regarding the Regular Inspection of MRT Jiantan Station Rooftop Suspension System” to conduct visual and geometric measurements on the appearance of the Station structure. However, since the stress relaxation status of the suspension system is not clear through the above procedure, we have further adopted the “MRT Jiantan Station Rooftop Suspension System Structure Safety Assessment and Monitor (Phase I)” project (the Project). The Project was launched from June 2016 to June 2017 to ensure the safety of the rooftop structure by establishing a structure analysis mode for the suspension system to simulate the stress on the system. From both onsite inspection and structural analysis, we inferred that the wire ropes have not lost their strength to an apparent degree and saw no exceptions to the geometric shapes of the main ropes, meaning that the structure of the rooftop suspension system remains true to its original design and construction idea. Nevertheless, to ensure operation safety, we suggested that equipment be set up to monitor the rooftop suspension system and the nature of the structure.

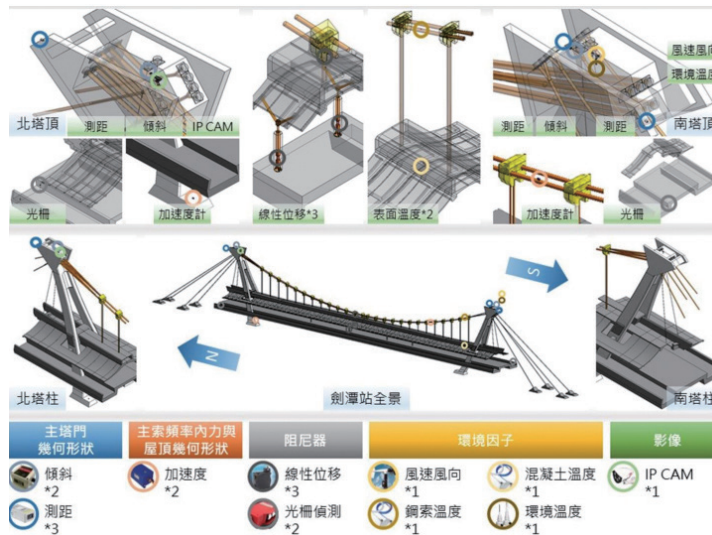
In response to the previous results and suggestions, we launched the “Auto-monitoring and Structure Safety Assessment for MRT Jiantan Station Rooftop Suspension System (I)” from May 2019 to April 2023. The BIM technology-based project established a real-time monitoring system and auto-monitor equipment, both of which were tested to ensure their fitness for the requirements. By 2020, the auto-measurement and structure safety assessment had come into effect. Based on excerpts from 2020-2022 monthly, quarterly, and annual reports, assessment indicated that most of the data remained within acceptable limits, and the structure of the wide-span suspension system was confirmed to perform with only minor differences from the original design and construction, indicating that the structure still reflects the original design concept. The layout of the project’s monitoring equipment is attached.

As an extension to the results of the auto-monitor and onsite inspection, by 2023, we

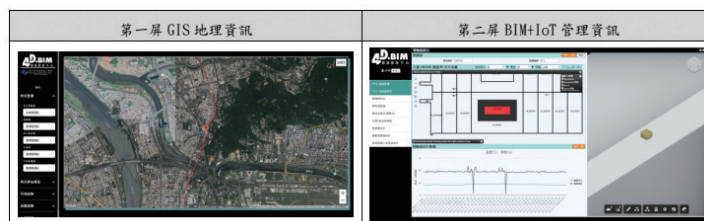
launched the "Auto-monitoring and Structure Safety Assessment for MRT Jiantan Station Rooftop Suspension System (II)," which was commissioned to a selected professional vendor for a three-year technical service contract. As the machines are exposed to the elements, we have also established lightning arrester modules, which are inspected annually to ensure the proper functioning of the monitors for data transmission.



Jiantan Station Appearance



Locations of monitors



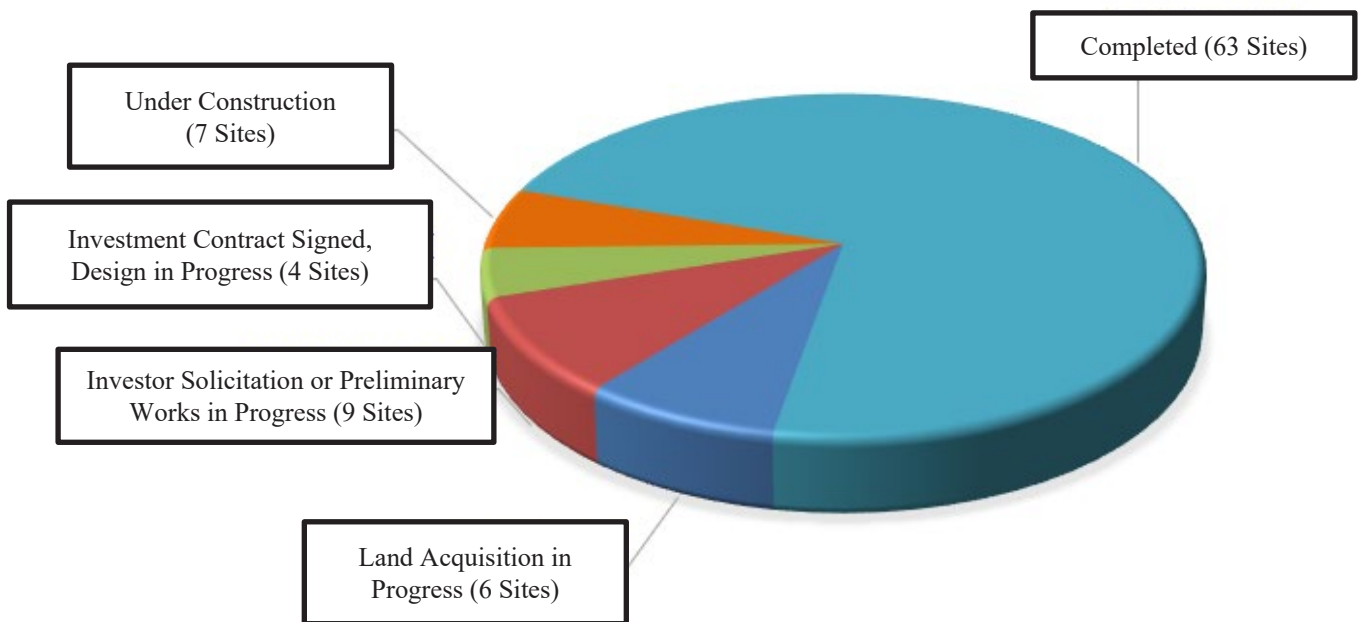
Images from the two real-time monitoring screens

Land Acquisition and Land Development Fund Implementation Results

An Overview of Land Development

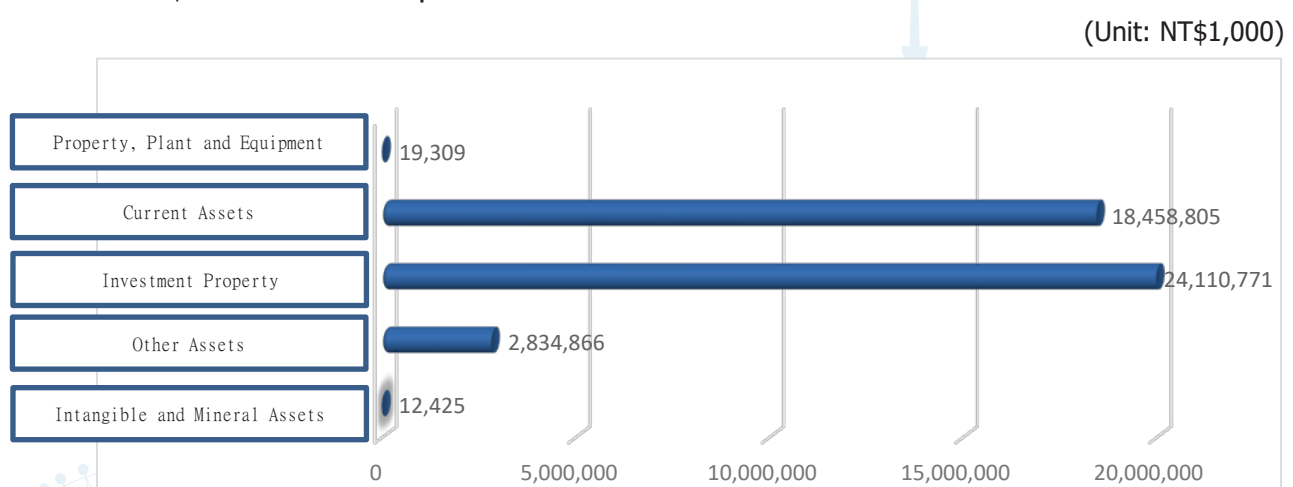
As of December 31, 2023, a total of 89 land development sites have been approved.

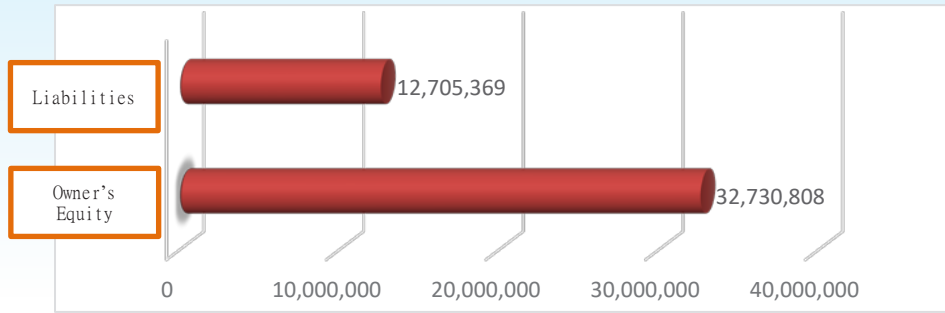
➤ Progress status of the approved 89 land development projects



➤ Status of MRT Land Development Funds

Current performance: As for the end of December 2023, the total of all assets has reached NT\$45.43617b. The performance chart shows the status below:





Sites Under Construction

Seven sites under construction: Sanchong Station (M6), Songjiang Nanjing Station (M3), Zhonghe Senior High School Station (M6), C1/D1, Liancheng Jinhe Station (M3) and Xindian District Office Station (M23) Development Building.



C1/D1 Development Building Rendering Photo

Performance of Publicly Owned Property Earned from JD Projects

The property right transfer and handover following the public auction of one residence (including a parking space) was completed at Wenhua line Gangqian station. The total sales revenue (before tax) is approximately NT\$30,907,531 which has exceeded the 2023 annual land development fund budget by NT\$25,282,000.

Operation and Management of Publicly Owned MRT Land Development Property – for Rent

Open Tender Rent Performance of Publicly Owned Property by JD Projects

MRT Route	JD Building	No. of Offices	No. of Stores	No. of Shopping Malls	No. of Residences	Total	No. of Units Rented	No. of Units for Rent
Tamsui Line	Taipei Main Station (T1)	9				9	9	0
	Tamsui Station			5		5	5	0
	Guandu Station (T40)	24			6	30	30	0
Wenhu Line	Technology Building Station (T7)	4	1			5	5	0
	Daan Station (T6)	5				5	5	0
	Gangqian Station (T9)			3	18	21	21	0
	Xinhai Station (T10)	5		1	37	43	43	0
	Zhongxiao Fuxing Station (T4, T10)			1		1	1	0
	Neihu Station	77	2	1		80	80	0
Bannan Line	Yongchun Station (T19)		3			3	3	0
	Yongchun Station (T21)		1			1	1	0
	Houshanpi Station (T24)	1	1			2	2	0
	Houshanpi Station (T25)		3			3	3	0
	Jiangzicui Station (M1)	2				2	2	0
	Longshan Temple Station (T1)				11	11	11	0
Xindian Line	Guting Station (T14)	4				4	4	0
	Guting Station (T15)	5	2			7	7	0
	Taipower Building Station (T13)	4				4	4	0
	Gongguan Station (T11)	27		4		31	31	0
	Wanlong Station (T6, T7)	1	1			2	2	0
	Jingmei Station (T3)	1				1	1	0
	Jingmei Station (T4)	3				3	3	0
	Qizhang Station (M10, M11)			4		4	3	1
	Xindian District Office Station (M22)	25				25	25	0
	Xindian Depot (MeHAS)	399		9	258	666	666	0
	Xindian Station (M24, 25, 26, 27)				11	11	11	0
Dapinglin Station (M8)				11	11	11	0	
Zhonghe Line	Dingxi Station (M2)	11				11	11	0
	Dingxi Station (M3)			2		2	2	0
	Jingan Station (M5)	4				4	4	0
	Nanshijiao Station (M6)	6	2		12	20	20	0

MRT Route	JD Building	No. of Offices	No. of Stores	No. of Shopping Malls	No. of Residences	Total	No. of Units Rented	No. of Units for Rent
Xinlu Line	Zhongxiao Xinsheng Station (M14)	13				13	13	0
	Xingtian Temple Station (M5)	12	1			13	13	0
	Xingtian Temple Station (M7)	4				4	4	0
	Xingtian Temple Station (M8)	2				2	2	0
	Dongmen Station (M1)	5				5	5	0
	Taipei Bridge Station (M2)				218	218	218	0
	Cailiao Station (M4)				103	103	103	0
	St. Ignatius High School Station (M1)		2			2	2	0
	Daqiaotou Station (M2)				23	23	23	0
	Luzhou Station		18		521	539	530	9
Xinyi Line	Daan Station (M3)	5				5	5	0
	Xinyi Anhe Station (M5)	19			3	22	22	0
Songshan Line	Nanjing Fuxing Station (M4)	6				6	6	0
	Zhongshan Station (M1)	7	2		81	90	90	0
	Zhongshan Station (M2)	9		2		11	11	0
Total Units		699	39	32	1313	2083	2073	10

Current Status of Unified Management at Each Development Building

MRT Line	Site	Commissioned Unified Management Period	Notes
Wenhua Line	Zhongxiao Fuxing Station (T4, T10)	June 30, 2016 ~ December 29, 2025	<ol style="list-style-type: none"> This building's property (car park included) is handled by a joint holding of shares and trust deed, operated by Pacific SOGO Department Stores Co., Ltd. The initial lease ended on June 29, 2016 and was renewed with a fixed monthly rent method, from June 30, 2016 to December 29, 2025.
	Neihu Station (T11)	December 1, 2017 ~ May 31, 2027	<ol style="list-style-type: none"> The public property of this building includes a shopping mall and two shops on 1F, rewarded car parks on 5F-7F with a total of 511 spaces, and parking spaces on B1F B3F for the shopping mall, operated by Ruentex Development Co., Ltd. The lease began on December 1, 2017 and will end on May 31, 2027, with a fixed monthly rent method. An excess profit-sharing mechanism is applied (a revenue check is performed every May according to an accounting approved financial report).
Xinlu line	St. Ignatius High School Station (M1)	December 1, 2017 ~ May 31, 2027	<ol style="list-style-type: none"> The public property of this building includes a shopping mall on B1F and B2F, and a car park (20 spaces) on B3F and B5F, operated by Fudeng Construction. The lease began on December 1, 2017 and will end on May 31, 2027, with a fixed monthly rent method.

Taipei Main Station District Parcel C1 and D1 Land Development Project

Taipei Main Station District Parcel C1/D1 land development project is the highlight of the West District Gateway Plan. All public facilities of the West District Gateway Plan have fallen into place one after another. The inauguration of the Taoyuan Airport MRT line on March 2, 2017 together with the MRT-integrated structure of the Taipei Main Station District Parcel C1/D1 land development project with Taoyuan Airport MRT A1 Taipei Main Station have provided more advantageous investment conditions for this development project. On October 14, 2014, Taipei City Government announced the termination of the fifth open tender for the project, and the government has already proclaimed new standard land development operating procedures for the improvement of land development tasks. For the Taipei Main Station District Parcel C1/D1 land development project, international biddings will be utilized to attract investments, and standard operating procedures will be employed to select professional service consultants with international investment experience as well as for tasks in preparation for the recruitment of contractors. Public bidding was announced on March 31, 2018, and the bidding was closed on October 1, 2018. Three stages of selection tasks (qualifications, specifications, and prices) have already been completed for the selection of optimal applicants, and lease signing tasks have been completed as of December 17, 2019. After that, the work of building design has commenced, and the project has been moved under review by the relevant entities. Since May 20, 2020, several review works including the cultural heritage review by the Ministry of Culture, the environment impact assessment, the traffic impact assessment, and the urban design review have been initiated. D1 land building use-permits were obtained on October 21, 2022 and C1 land building use-permits were obtained on October 25 of the same year. After the construction of this development project is completed, it will provide a refreshing national gateway to city citizens and nationals.

Wanda Line Jincheng Depot and Juguang Station/Kalah Station (M9) Land Development Project

A total of eight land development projects are planned for Wanda line Phase I, and among them Jincheng Depot and Juguang Station/Kalah Station (M9) are the two development projects with the largest and smallest sites areas. With a total investment amount exceeding NT\$20 billion, the total sales amount for the two projects will be over NT\$40 billion. The site area of Jincheng Depot and Juguang Station is approximately 35,000 ping, whereas the site area of Kalah Station (M9) is only approximately 128 ping with triangular-shaped terrain which poses difficulties for planning. For the sake of creating opportunities and effectively soliciting investors for Kalah Station (M9), DORTS reported the case to the government at the 66th Promotion of Private Participation in Public Construction Committee on March 14, 2022 and obtained approval to merge the two land development projects to attract investment. This is the first time DORTS chose to adopt this method of merging in order to attract investment. Due to the vast differences in the locations and scales of the two sites, meticulous planning of how to include them both in one investor solicitation document was

required while also considering the fairness and reasonability of the tasks in a manner which would enable the investors to complete Kalah Station (M9) development building as soon as possible in order to avoid disputes over the solicitation process and contract performance. After DORTS engaged in repeated discussions and held numerous meetings, and after experts and scholars had been invited to assist in providing consultation advice, the eligibility requirements for applicants in relation to the selection process and the development proposal were produced together with rating items and price comparisons, etc. In addition, after completing the review of deposit payment and refund, and contract penalties for contract performance operations, investor solicitation for the project was officially announced on June 30. Furthermore, the signing of investment contracts was completed on June 9, 2023, and the approval of the land development plan was concluded on August 4.

Commissioning of Urban Renewal for City-owned Land

- **DORTS was commissioned to conduct urban renewal on six sites, and the solicitation and signing of contracts has been completed. The progress of the six sites is as follows:**
 - ✧ Urban renewal tasks at city-owned military dormitory land and adjacent land on Roosevelt Road, Wenshan District, Taipei: Building use-permits were obtained on November 12, 2012; 44 city-owned units were handed over to buyers on April 30, 2013.
 - ✧ Urban renewal tasks consisting of six plots on No. 107-2, Subsection 2, Yixian Section, Xinyi District, Taipei: On June 13, 2016 building use-permits were obtained; the acceptance and property handover for 37 city-owned units was completed on February 1, 2018.
 - ✧ Urban renewal project on Land No. 781, Nanshan Section, Zhonghe District, New Taipei City and urban renewal project on Land No. 140, Xinhe Section, Zhonghe District, New Taipei City: use-permits were obtained on August 10 and September 4, 2018; 208 city-owned units were handed over to buyers in January and February, 2019.
 - ✧ Urban renewal project consisting of eight plots on Land No. 580, Subsection 4, Zhongshan Section, Zhongshan District, Taipei: The right exchange plan review for the urban renewal was completed on April 23, 2019. Building use-permits were obtained on March 6, 2020, and the construction will commence on August 11 of the same year. As of the end of December 2023, construction progress has reached 95%. Building use-permits are expected to be obtained in July, 2024.
 - ✧ Urban renewal project consisting of 39 plots on Land No. 623, Subsection 3, Muzha Section, Taipei: Section A building use-permits were obtained on March 2, 2022
 - ✧ and Section B building use-permits were obtained on April 1, 2022, and the construction commenced on August 26 of the same year. As of the end of December

2023, construction progress of the above two sections has reached 13%. The business revision plan and the right of exchange plan for Section B were approved on December 21, 2023.

Land Development Fund Implementation Results

➤ **Reduction of Massive Land Expropriation Costs and Smooth Acquisition of Land for MRT Use**

As of December 31, 2023, a total of 89 land development sites have been approved. A total of NT\$36.7 billion was saved in land acquisition costs. It is estimated that the cumulative real estate value will be approximately NT\$241 billion. By 2023, self-liquidating funds for the MRT will amount to NT\$12 billion, and this is the first case of repaying self-liquidating funds for domestic public rail track construction. The created internal and external benefits are as follows:

- ✧ Internal Benefits: Contracts were signed and usage permits were acquired at 63 base sites. The private sector invested NT\$112.23 billion and provided more than 720,000 pings of floor area for commercial and residential use.
- ✧ External Benefits: To facilitate transfers between transportation modes, transfer facilities established at 14 sites provided 970 parking spaces for cars, 3,066 spaces for scooters, and 2,276 spaces for bikes. Taipei City Government also established YouBike facilities near MRT station exit/entrances to provide an accessible, convenient, and environmentally-friendly mode of transportation.

➤ **Provision of Land for MRT Facilities and Integrated Construction to Achieve MRT Operational Goals**

Construction permits were requested for land development buildings, whether or not they were integrated with MRT facilities. In 1987, the Executive Yuan defined MRT facilities as special buildings which were required to be completed prior to the scheduled operation date in order to ensure the smooth operation of the MRT. Therefore, DORTS typically launched the design and construction of integrated structures or MRT facilities prior to investor solicitation.

➤ **Yielding of MRT Facility Construction at Land Development Sites to Investors to Increase Efficiency and Reduce Interface**

Investors were permitted to launch construction at 18 sites: Xinzhuang line's Xingtian Temple Station (M8) and Daqiaotou Station (M2); Xinyi line's Daan Park Station (M2) and Daan Station (M3); Songshan line's Nanjing Sanmin Station (M9, M10), Nanjing Fuxing Station (M4), Songjiang Nanjing Station (M10); Wanda line's Liancheng Jinhe Station (M3) and Zhonghe Senior High School Station (M6); Circular line south section Station Y3; Circular line north section Station Y20, Y21(2 sites), Y22 and Y23; Shilin Station (Y26); Longshan Temple Station. This practice not only led to efficient implementations and fewer design changes but also reduced disbursement for integrated construction.

Land Acquisition

➤ Land Acquisition and Compensation Operations

I. Public Land

Circular line north & south section:

Jingmei River to Station Y6 tunnel crossing construction: Three plots of land at No. 436-2 Shunan Section, Xindian District, New Taipei City and four plots of land at No. 493-4 Baoyuan Section of the same district with a total area of 117.04m². Paid appropriation was approved on August 24, 2023 by the Executive Yuan (Official letter Ref. 11235013150).

II. Private Land

Circular line north & south section:

1. Station Y19A (land for MRT system): Two plots of land with a total area of 4847.99m² at No. 178 and 179, Wugong Section, Wugu District, New Taipei City. An agreement was reached with the landowner to establish superficies rights free of charge.
2. Station Y20 (land for MRT system): One plot of land with an area of 989.72m² at No. 842-1 Zhongshan Section, Luzhou District, New Taipei City. A land-acquisition agreement has been reached with the landowner, and construction has commenced.
3. Station Y20 (MRT development zone): Three plots of land with a total area of 1477.55m² at No. 726-1, 734-1 and 735-1 Heping Section, Luzhou District, New Taipei City. All landowners agreed to participate in joint development.
4. Station Y21 (land for MRT system): Five plots of land with a total area of 291.24m² at No. 290, Chongyang Section and No. 260-1, Shude Section, Luzhou District, New Taipei City. An agreement was reached with some of the landowners on purchase prices. Land expropriation operations are being handled for those who were unable to sign the contract. Another landowner applied for a collective purchase of a plot of land with an area of 38.29m² at No. 260-3, Shude Section, Luzhou District, New Taipei City.
5. Station Y21 (MRT development zone): One plot of land with an area of 1124m² at No. 232, Chongyang Section, Luzhou District, New Taipei City. All landowners agreed to participate in joint development.
6. Station Y23 (MRT development zone): Five plots of land with a total area of 1693.57m² at No. 245, Fugui Section, Sanchong District, New Taipei City. All landowners agreed to participate in joint development.

Wanda line Phase II:

1. Station LG14-LG15 (land for elevated pier): Four plots of land with a total area

of 252m² at No. 782-1, Datong Section, Shulin District, New Taipei City. An agreement was reached with the landowner on purchase prices, and the land has been transferred and handed over for construction.

2. Station LG15 (land for MRT system): Three plots of land with a total area of 1868m² at No. 484, Datong Section, Shulin District, New Taipei City. An agreement was reached with the landowner on purchase prices, and the land has been transferred and handed over for construction.
3. Station LG17 (land for MRT system): Two plots of land with a total area of 739.68m² at No. 381, Beinei Section, Shulin District, New Taipei City. An agreement was reached with the landowner on purchase prices, and the land has been transferred and handed over for construction.
4. Station LG18 (land for MRT system): One plot of land with an area of 940.38m² at No. 440-1, Zunfu Section, Shulin District, New Taipei City. An agreement was reached with the landowner on purchase prices, and the land has been transferred and handed over for construction.
5. Land for LG18 MRT system (station structure and exit/entrance A), land for LG20 MRT system (exit/entrance A and B), land for LG21 MRT system, and for private land between the pillars and piers for Station LG18-LG20: The land compensation valuation has been completed, and negotiated price purchases and transfer signing operations are being handled in succession.

➤ **Land Acquisition Status:**

Land Appropriated for Public Construction in 2023

Project Name	Acquisition Method	Landowner	Administrator (Authority)	Number of Land Lots	Shared Land Area (m ²)	Approval Reference No.
Circular line north & south section (Jingmei River to Station Y6 tunnel crossing construction)	Paid appropriation	Republic of China	National Property Administration, Ministry of Finance	7	117.04	Approved by the Executive Yuan (Official letter Ref. No. 11235013150)

Purchased or Expropriated Land Agreements in 2023

Project Name	Acquisition Method	Landowner	Number of Land Lots	Shared Land Area (m ²)	Date of Completion
Circular line north & south section Station Y19A (land for MRT system)	Establishment of superficies rights	1	2	4847.99	March
Circular line north & south section Station Y20 (land for MRT system)	Purchase of negotiation	1	1	989.72	February
Circular line north & south section Station Y21 (land for MRT system)	Collective purchase	1	1	38.29	March
Circular line north & south section Station Y21 (land expropriation operations are being handled for landowners who were unable to sign the contract)	Purchase of negotiation	22	5	291.24	March
Wanda line Phase II Station LG14-LG15 (land for elevated pier)	Purchase of negotiation	13	4	252	January
Wanda line Phase II Station LG15 (land for MRT system)	Purchase of negotiation	7	3	1868	February
Wanda line Phase II Station LG17 (land for MRT system)	Purchase of negotiation	1	2	739.68	September
Wanda line Phase II Station LG18 (land for MRT system)	Purchase of negotiation	1	1	940.38	March

Results of Land Improvements Assessment in 2023

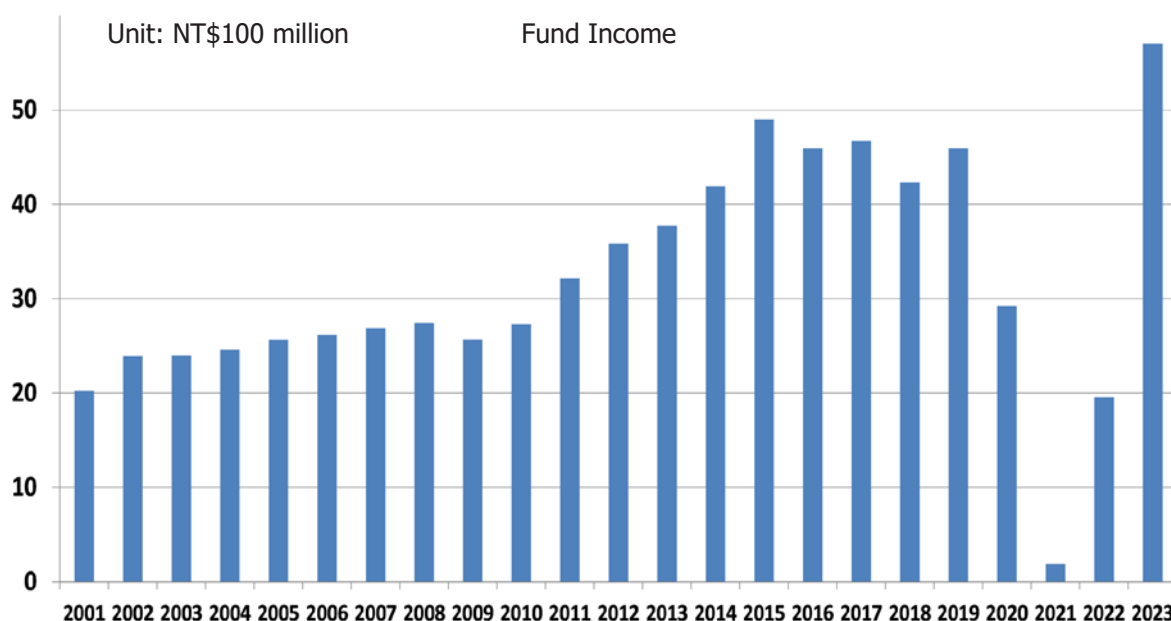
Project Name	Complete Contents	Date of Completion
Circular line north & south section Station Y20 (land for MRT system)	Completion of the land transfer and distribution of compensation payments.	February
Circular line north & south section Station Y20 (MRT development zone)	The landowner agreed to participate in the development and will be notified of relocation five months before construction begins.	May
Circular line north & south section Station Y21 (MRT development zone)	The landowner agreed to participate in the development and will be notified of relocation five months before construction begins.	April
Circular line north & south section Station Y23 (MRT development zone)	The landowner agreed to participate in the development and will be notified of relocation five months before construction begins.	January
Wanda line Phase II Station LG15 (land for MRT system)	Completion of the land transfer and distribution of compensation payments.	September
Wanda line Phase II Station LG17 (land for MRT system)	Completion of the land transfer and distribution of compensation payments.	November
Wanda line Phase II Station LG18 (land for MRT system - exit/entrance B)	Completion of the land transfer and distribution of compensation payments.	August
Wanda line Phase II Station LG18 (land for MRT system - station structure and exit/entrance A)	The land improvement assessment has undergone review and approval by the relevant departments of the New Taipei City Government, and the compensation amount has been officially approved.	October
Wanda line Phase II Station LG20 (land for MRT system - exit/entrance A)	The land improvement assessment has undergone review and approval by the relevant departments of the New Taipei City Government, and the compensation amount has been officially approved.	December
Wanda line Phase II Station LG20 (land for MRT system - exit/entrance B)	The land improvement assessment has undergone review and approval by the relevant departments of the New Taipei City Government, and the compensation amount has been officially approved.	December
Wanda line Phase II Station LG21 (land for MRT system)	The land improvement assessment has undergone review and approval by the relevant departments of the New Taipei City Government, and the compensation amount has been officially approved.	December

Replacement Fund and Asset Management

Taipei MRT Fixed Asset Replacement Fund

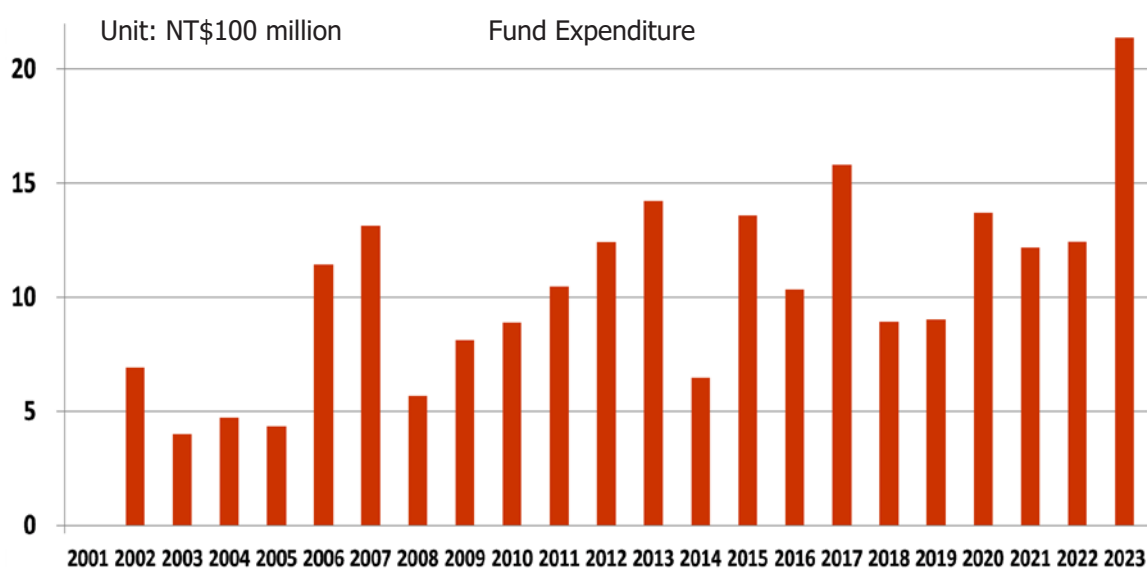
➤ Fund Income

As of December 31, 2023, fund income totaled NT\$73,702,185,746. Historic fund income is shown in the following chart:



➤ Fund Expenditure

As of December 31, 2023, fund expenditures totaled NT\$22,836,538,488. Historic fund expenditure is shown in the following chart:

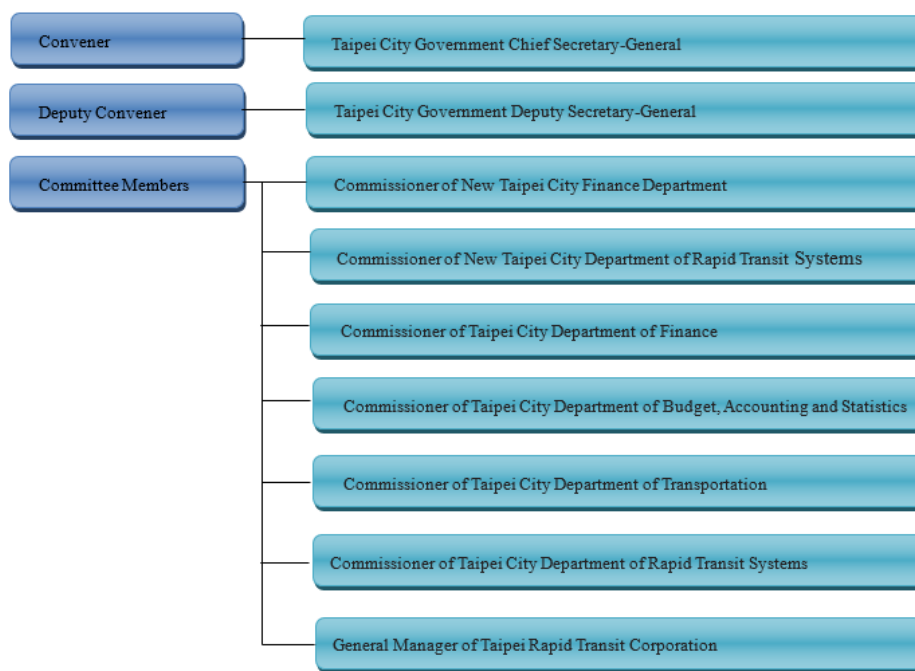


➤ Operation Status

Duties of Fund Management Committee:

- ◇ Deliberation of systemwide facility replacement plan
- ◇ Supervision of systemwide facility replacement of in-service routes to meet operational needs
- ◇ Deliberation of external financing of the fund
- ◇ Deliberation of other major businesses associated with fund management and operation

Organization of Fund Management Committee



➤ **Business Performance Review**

- ◇ A total of NT\$4,383,683,000, including NT\$3,931,300,000 from rental income, NT\$448,733,000 from interest income, and NT\$3.65 million from miscellaneous income, was arranged for the fund in 2023.
- ◇ Fund purposes: In 2023, the fund was mainly spent on replacement of electrical and mechanical equipment, civil works facilities on the MRT Tamsui (including Xinbeitou Branch), Zhonghe, Xindian (including Xiaobitan Branch), Xiaonanmen, Nangang, Banqiao, Tucheng, Wenhua, Nangang eastern extension, Luzhou, Xinzhuang, Xinyi, Songshan, and Tucheng extension to Dingpu lines, as well as administrative business associated with the fund. A total of NT\$2,383,797,000, including NT\$233,445,000 for the MRT facility replacement plans, NT\$27,641,000 for regular administrative plans, and NT\$2,122,711,000 for architecture and facilities plans, was arranged. According

to the resolution of the first committee meeting in 2023, DORTS' Civil Engineering and Architectural Design Division, its subordinate Systemwide E&M Project Office, and Taipei Rapid Transit Corporation (TRTC) were commissioned to conduct budget performance of fixed asset purchases.

✧ **Annual Performance**

1. Business Plans:

- (1) Scheduled Plans: A total of 50 capital expenditure plans (including continual and new plans) in 2023.
- (2) Non-scheduled Plans: A total of 13 capital expenditure plans in 2023 were subject to procurement of facilities/assets, domestic/foreign import and market prices.
- (3) Deferred expenditure: A total of 14 deferred expenditure plans in 2023 were subject to house repairs and construction.

2. Budget Performance:

(1) Fund Sources

- a. Asset revenues: The 2023 statutory budget was NT\$4,380,033,000, as of December, actual execution result was NT\$5,669,056,569.
- b. Other revenues: The 2023 statutory budget was NT\$3,650,000, as of December, actual execution result was NT\$35,188,991.

(2) Fund Uses

- a. MRT facilities replacement plans: Compared with the 2023 statutory budget of NT\$233,445,000, as of December, actual expenditures were NT\$240,520,830.
- b. Regular administrative plans: Compared with the 2023 statutory budget of NT\$27,641,000, as of December, actual expenditures were NT\$27,337,996.
- c. Architecture and facilities plans: Compared with the 2023 statutory budget of NT\$2,122,711,000, as of December, actual expenditures were NT\$1,871,093,098.

(3) Budget Deficit

The 2023 statutory budget surplus was NT\$1,999,886,000, as of December, with an execution shortfall of NT\$3,565,293,636.

3. Financial Management:

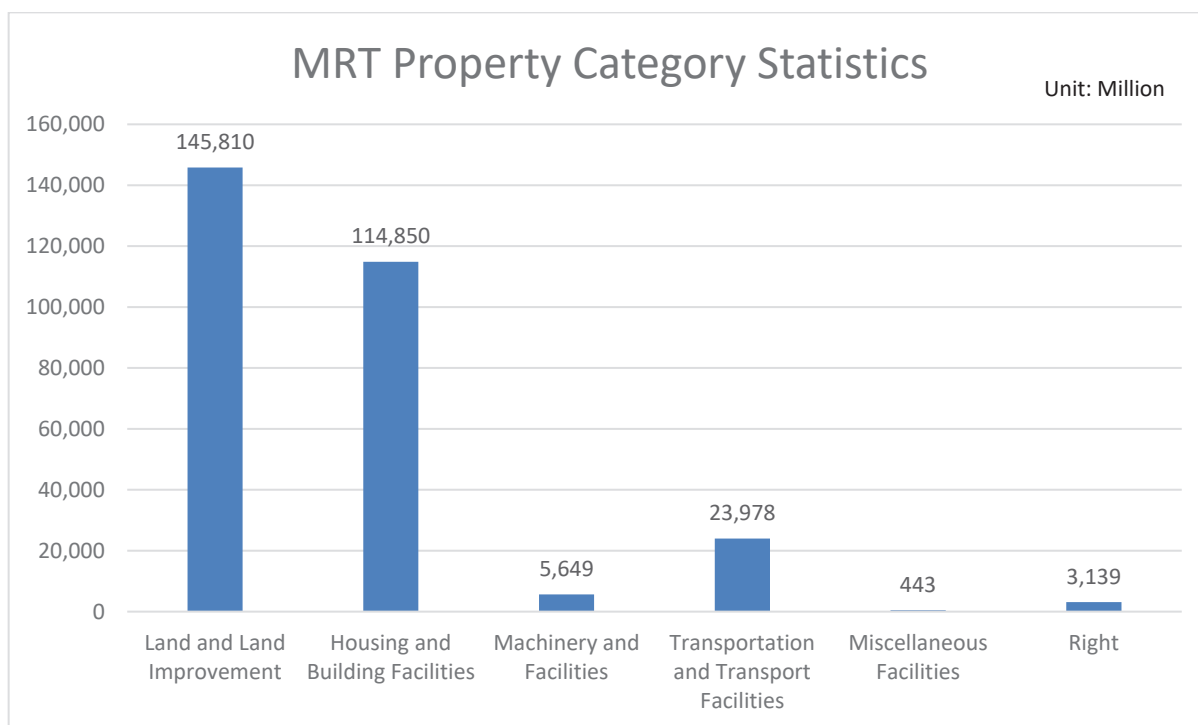
- (1) The primary source of the fund is TRTC's allocations of facility replacement and flexible rent, and the fund is used for the replacement of MRT facilities in the short-term, medium-term, and long-term plans.
- (2) The fund is used in comply with the short-, medium- and long-term financial resources for replacement, and TRTC's flexible rent allocations, and deducting the estimated annual expenditure, the liquid fund is required to be used effectively, thus financial management of the fund is of great importance. Considering

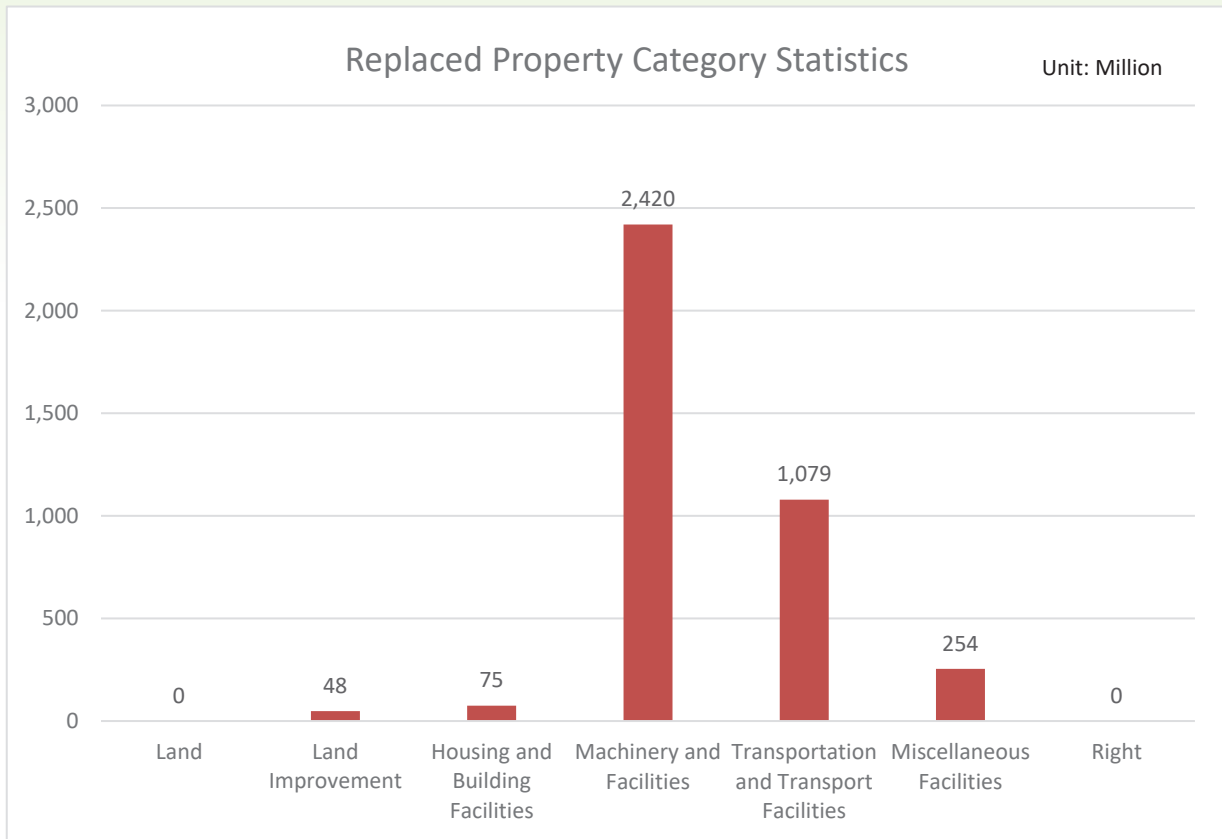
liquidity and security considerations, DORTS contacts financial institutions for price inquiries for time deposits, and as of December 31, 2023, the Fund's term deposits amounted to NT\$37.1 billion.

MRT Property Management

➤ MRT Properties

The amounts of MRT properties and replaced properties for each of the MRT routes as of the end of December, 2023:





➤ **Property Inspection Tasks**

In order to manage MRT property thoroughly and effectively, DORTS inspects MRT properties annually. These inspections allow DORTS to understand how TRTC manages, uses and maintains the city-owned properties which are commissioned by DORTS, and how TRTC handles the illegally occupied or idled land and buildings along MRT routes. Staff members dispatched by the affiliated engineering departments from DORTS' associated offices conducted a routine check from November 21 to December 4, 2023. Results were sent in writing to TRTC for improvement and follow-up.

➤ Insurance

Taipei MRT Insurance Claims Statistics

Claims Statistics as of December 31, 2023

(Unit: NT\$)

Route	Claims Amount Prior to Dec. 31, 2022	Claims Amount from Jan. 1, 2023 to Dec. 31, 2023	Total
Xinzhung Line	202,933,607	–	202,933,607
Luzhou Line	269,955,614	–	269,955,614
Neihu Line	144,115,151	–	144,115,151
Xinyi Line	88,195,881	–	88,195,881
Xinyi Eastern Extension	1,135,584	–	1,135,584
Songshan Line	180,536,282	–	180,536,282
Circular Line Phase I	91,317,600	3,052,112	94,369,712
Taichung Wuri-Wenxin-Beitun Line	17,840,731	–	17,840,731
Wanda-Zhonghe-Shulin Line (Phase I)	7,745,608	1,964,681	9,710,289
Total	1,003,776,058	5,016,793	1,008,792,851

Public Relations and Marketing Activities

Advocacy Activities

Mayor Chiang Wan-an believes that the MRT is the cardiovascular system of the capital city. In order to comprehensively promote the MRT network construction of the Taipei Metropolitan Area and overcome the failure of numerous bids for civil engineering projects on Circular line north & south section which were the result of major environmental impacts caused by the pandemic, rising prices of materials, and labor and materials shortages. After Mayor Chiang took office, the latest market prices were adopted in accordance with the law to adjust the funding for each tender on the Circular line north & south section. In addition, DORTS actively researched and revised the financial plan to submit it to the central government for approval. This year following the formal commencement of Circular line north section and Wanda line Phase II construction, DORTS once again overcame the dual difficulties of successively commencing construction on north section contracts CF680B and CF680A and south section contract CF670A as well as awarding contracts for bids on north section contract CF690C and Wanda line Phase II contract CQ880A!

As for construction of section contract CF680B on the north section, which is located between Luzhou and Sanhong, and section contract CF680A, which is located between Wugu and Luzhou, groundbreaking ceremonies were held in New Taipei City on March 18 and October 15 respectively. Taipei City Mayor Chiang Wan-an and New Taipei City Mayor Hou Yu-ih co-presiding over



Photo 1: Groundbreaking ceremony for section contract CF680B of the Circular line north section (March 18)



Photo 2: Groundbreaking ceremony for section contract CF670A of the Circular line south section (June 13)



Photo 3: Groundbreaking ceremony for contract CF680A of the Circular line north section (October 15)

the ceremonies. Through the ceremony activities and media reports, residents of Taipei City and New Taipei City were informed of the projects and are collectively anticipating the expansion of the route network, which will integrate the benefits of the overall transportation network in the Taipei City, New Taipei City, and Taoyuan City metropolitan area. In the future living circles in northern Taiwan will be more closely integrated through this route network.

This year, an important first step was also taken on Circular line south section construction, which is highly anticipated by residents of Wenshan District. The groundbreaking ceremony was held for section contract CF670A of Circular line south section on June 13. The construction scope of this section is located at National Chengchi University adjacent to MRT Wenhua line Taipei Zoo Station. Mayor Chiang Wan-an expressed his gratitude to National Chengchi University for their willingness to provide campus land for the construction of the MRT station. The construction of the MRT system will not only benefit students and faculty of National Chengchi University but also promote the development of the area surrounding the university as well as the local region.

In addition to the good news about Circular line north & south section and Wanda line Phase II, Circular line east section, which is the last piece of the puzzle for the Taipei MRT Circular line, was also approved by the Executive Yuan in March. On April 28, Executive Yuan Premier Chen Chien-jen led a team of central government officials to Songshan Station in Taipei City to inspect east section Station Y36 and gain an understanding of the planning status for the east section. The approval of the east section is of considerable significance to the Taipei Metropolitan Area. Following the completion of construction, it will connect with Circular line north & south section as well as Circular line Phase I, which is currently in operation. With a total length of 49.3km and 42 stations, passengers will be able to reach destinations by taking only one train, just like the Yamanote Line in Tokyo, and it will become a very important route in the Taipei Metropolitan Area.



Photo 4: Executive Yuan Premier Chen Chien-jen inspected the planning status of Circular line east section (April 28)

Out of concern for MRT construction, on March 6 Mayor Chiang entered an MRT construction site for the first time to inspect the up-track tunnel breakthrough construction traversing the Xindian River from Wanda line Kalah Station to Yonghe Yongping Elementary School Station. Striding into the underground station at a depth of 26 meters he witnessed the completion of the shield tunnel, which crosses the Xindian River with a length of 1,706 meters, and he experienced first-hand the hardships of MRT construction. On April 10, he inspected Xinyi eastern extension construction, which is recognized as the most difficult

construction project in the history of the MRT, to gain an understanding of the complexity of the geological engineering for this project. On August 18 he accompanied Executive Yuan Premier Chen Chien-jen to the Taipei City section of Wanda line Phase I construction for an on-site inspection of the construction progress. In addition to expressing appreciation to the colleagues for their grueling efforts on the excavations deep underground, Mayor Chiang also expressed his affirmation and praise of the employees for maintaining high quality standards in the face of the grave difficulties of long-distance tunnel construction work. Media reports have also enabled the public to gain an understanding of the various challenges encountered during the construction of MRT projects.



Photo 5: Mayor Chiang Wan-an inspected the up-track tunnel breakthrough construction which traverses the Xindian River from Wanda line Kalah Station to Yonghe Yongping Elementary School Station (March 6)



Photo 6: Mayor Chiang Wan-an inspected the construction progress on Xinyi eastern extension (April 10)



Photo 7: Executive Yuan Premier Chen Chien-jen inspected the construction progress of the Taipei City section of Wanda line Phase I (August 18)

In order to drive urban development and ensure the sustainable operation of Taipei MRT, DORTS continually promotes land development, and this year yielded significant results in investor solicitation for land development. Investor solicitation was completed for MRT Jincheng Depot and Juguang Station/Kalah Station with a total investment of NT\$26.3 billion. Open investor solicitation was conducted for the following five development sites: Chiang Kai-Shek Memorial Hall Station, Xiaan Station, Zhonghe Station, Liancheng Jinhe Station, and Circular line south section. The total investment is expected to exceed NT\$8.5

billion, and it will inject a stream of private sector energy into public construction so that they can work together to create a bright new future.

The column erection ceremony has already been held for “Taipei Main Station District Parcel C1/D1 (Eastern Part) Land Development Project,” which is expected to be completed in 2027. With an anticipated total investment of NT\$60.6 billion, it is set to become a “new look of the western district, a new starting point for Taipei, and a new gateway to Taiwan.”



Photo 8: Briefing session for Wanda line Phase I Chiang Kai-Shek Memorial Hall Station (M4) and Xiaan Station (M10) land development project investor solicitation (August 14)



Photo 9: Briefing session for Wanda line Phase I Zhonghe Station (M2), Liancheng Jinhe Station (M4), and Circular line south section Station Y3 land development project investor solicitation (November 22)



Photo 10 Taipei Twin Towers Development Project Column Erection Ceremony (November 14)

The comprehensive planning report for Circular line east section, which is the last mile of the Circular line, was approved by the Executive Yuan this year. DORTS incorporates elements of the Circular line into the packaging design of promotional materials to match the progress of construction and released the practical and aesthetically pleasing “Taipei MRT Tote Bag.” In addition, various printed promotional leaflets or publications of various

societies, associations, and annual meetings have been combined with advertising of the vision of MRT project construction in order to publicize various aspects of MRT construction achievements.

萬大-中和-樹林線

帶動都市再生與發展 迎接經濟共榮圈

第一期工程路段：中正紀念堂站(臺北市)-橋樑段(新北市土城區金城路)，均為地下段，全長約9.5公里(含機廠支線約0.7公里)，共設9座地下車站和1座機廠。

第二期工程路段：橋樑(新北市土城區金城路)-迴龍段(新北市新莊區與中和新蘆線迴龍站相接)，全長約13.3公里(地下段2.8公里/高架段10.5公里)，共設13座車站(2座地下車站及11座高架車站)。

萬大-中和-樹林線路線示意圖

臺北市政府捷運工程局
臺北市中山北路二段48巷7號
Tel: 886-2-25215550 <http://www.dorts.gov.taipei>

克服工程挑戰

建構安全便捷的捷運系統

臺北捷運系統萬大-中和-樹林線(萬大線)第一階段工程，全長約9.5公里(含機廠支線約0.7公里)，設9座地下車站及1座機廠，路線行經臺北市中正、萬華區跨越新店溪至新北市永和、中和及土城區，施工時必須克服各種艱難的工程挑戰。

萬大線第一期工程

臺北市政府捷運工程局
臺北市中山北路二段48巷7號
Tel: 886-2-25215550 <http://www.dorts.gov.taipei>

永和永平國小站

萬大-中和-樹林線

帶動都市再生與發展 迎接經濟共榮圈

臺北捷運系統萬大-中和-樹林線(萬大線)第一階段工程，全長約9.5公里(含機廠支線約0.7公里)，設9座地下車站及1座機廠，路線行經臺北市中正、萬華區跨越新店溪至新北市永和、中和及土城區，施工時必須克服各種艱難的工程挑戰。

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萬大線第一期工程示意圖

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臺北市中山北路二段48巷7號
Tel: 886-2-25215550 <http://www.dorts.gov.taipei>

Photo 11: The advertising design of various societies, associations, and annual meetings combine elements of MRT construction.



Photo 12: The design of MRT promotional materials combine elements of MRT construction

DORTS periodically publishes Taipei MRT Newsletter to share MRT construction-related tidbits to provide information to public who wish to follow the progress of projects and gain an understanding of the arduous process of deep underground excavations. This enables them to grasp and deeply understand the many challenges that are inevitably faced in the implementation of MRT construction projects. The public can view DORTS' vision and the progress of MRT construction, including Xinyi eastern extension, Wanda line, Circular line north & south section, and Circular line east section, on DORTS' official website or the DORTS 2nd DPO Facebook and Instagram pages. Videos of the construction progress of each route along with various activities are released on DORTS official website, citizens are welcomed to show their support and concern for MRT project construction together.

DORTS Official Website: <https://www.dorts.gov.taipei/>

DORTS 2nd DPO Facebook: <https://www.facebook.com/dorts.2nd>

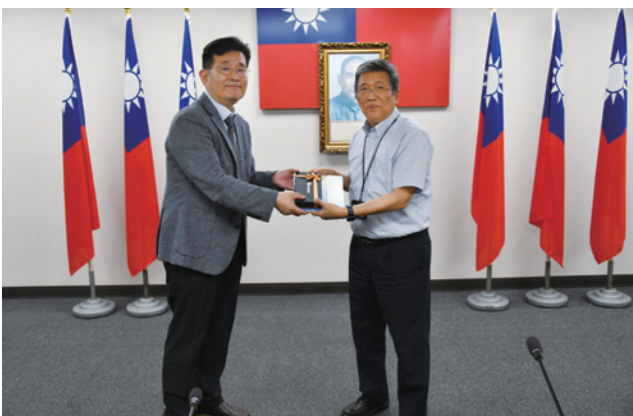
DORTS 2nd DPO Instagram: <https://www.instagram.com/dorts.2nd/>



Photo 13: Policy promotional videos on DORTS official website

Visiting Activities

This year DORTS received visitors from all walks of life for visitations and exchanges including an exchange seminar with Korea Railroad Research Institute (KRRI) and KNR SYSTEMS INC. (KNR) and a visiting delegation from the Hawaii State Legislature. Organizations from various sectors also attended briefings at DORTS and visited construction sites.



Photos 1-4: Exchange seminar with Korea Railroad Research Institute (KRRI) and KNR SYSTEMS INC (KNR) (June 26)



Photos 5-8: Visiting delegation from the Hawaii State Legislature (October 2)



Photo 9: Taipei Municipal Chien Kuo High School visited contract CQ842 construction site (January 7)



Photo 10: Agency Against Corruption, Ministry of Justice Personnel Training Course No. 50 visited contract CQ870 construction site (April 28)





Photo 11: New Taipei City Shuanghe Cultural and Historical Association visited contract CQ870 construction site (May 30)



Photo 12: Economic Affairs Department, Yilan Country visited contract CQ842 construction site (July 13)

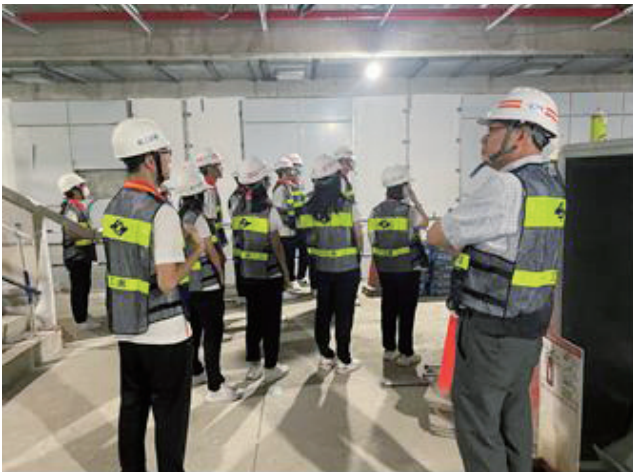


Photo 13: Agency Against Corruption, Ministry of Justice Personnel Training Course No. 51 visited contract CQ870 construction site (September 15)



Photo 14: National Central University visited contract CQ850 construction site (November 13)



Photo 15: New Taipei City Shuanghe Cultural and Historical Association visited contract CQ860 construction site (November 11)



Photo 16: Chung Hua University visited contract CQ870 construction site (December 22)

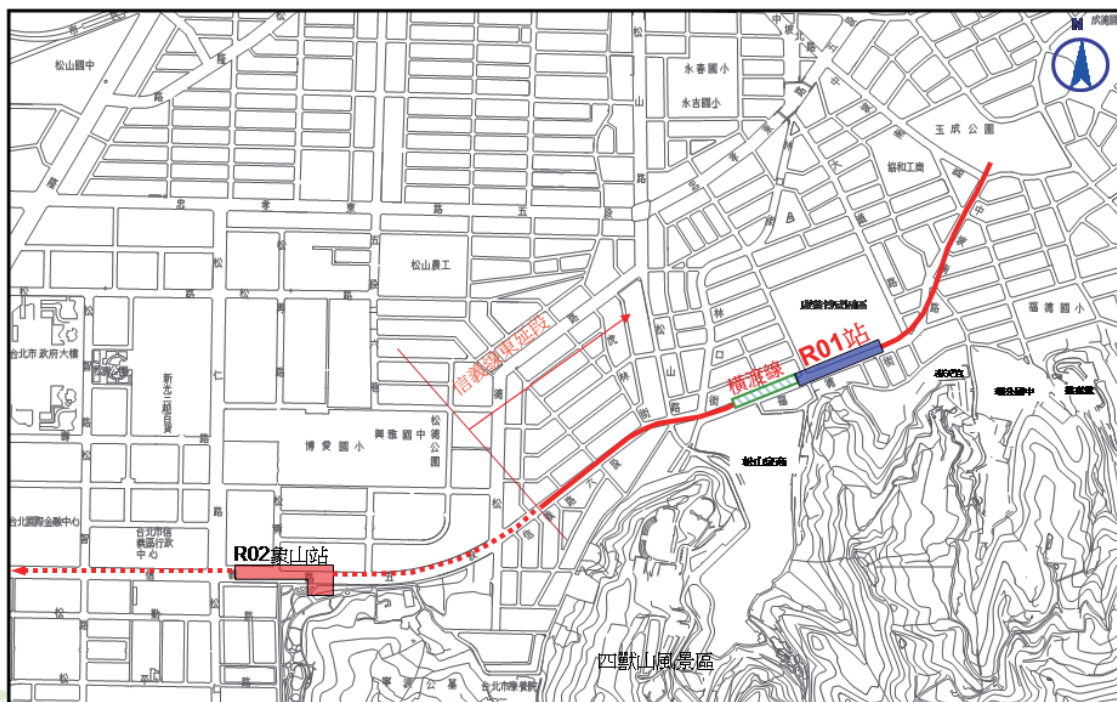
MRT Routes Under Construction

In 2023, the MRT routes currently under construction include the Xinyi eastern extension, Wanda line Phase I & II, Circular line north & south section and east section. Progress is as follows:

Xinyi Eastern Extension

The route of this project stretches from the eastern end tail track of Xiangshan Station (R05) on the Xinyi line, extends to the east via a high-capacity system along Sec. 6 of Xinyi Road (the originally planned Station R04 was cancelled) to Station R03, which was added in front of Guangci Charity Park on Fude Street and the front crossover. A shield tunnel was built from the east of Station R05, moving forward along Sec. 6 of Xinyi Road, passing the intersection of Civic Blvd. and Fude Street, then turning towards Zhongpo S. Road to Yucheng Park. The length of the route is approximately 1.42 km with one underground station, and a tail track for operational scheduling.

To accommodate foreign passengers with code-friendly station identification, all stations in operation have been given new codes by the TRTC in compliance with City Government policy. The originally planned Station R03 in front of Guangci Charity Park on Fude St. is now Station R01. Station R04 on Xinyi Rd. Sec. 6 has been discontinued, and R05 Xiangshan Station has been changed to Station R02.



Route map of the Xinyi eastern extension

➤ **Planning of MRT stations**

◇ The locations of the MRT station are as follows:

- Guangci/Fengtian Temple Station (R01): Underground along Fude St. in front of Guangci Charity Park in Xinyi Dist., Taipei City

➤ **Revision**

The third revision was approved by the Executive Yuan on September 27, 2023. The project is expected to be completed by June 2027, instead of 2024 as proposed in the original plan.

➤ **Construction progress**

◇ Section contract CR580C

- The section contract commenced on October 17, 2016. The contract consists of four subcontracts of the Xinyi eastern extension construction; the civil construction under contract CR285, the E&M and HVAC systems construction under contract CR380E, the elevator/escalator constructions under contract CR386K, and the track construction under contract CR581A. The construction scope includes the cut-and-cover construction of Station R01, the shield tunnel from the tail track working-shaft of Xiangshan Station to Station R01, and the shield tunnel construction from Station R01 to the tail track working-shaft of Yucheng Park.

◇ CR580C (the construction work of Station R01 and the civil work of the shield tunnel under contract CR285)

- Regarding the progress of Station R01 construction (including the crossover part), the work of the diaphragm wall, center post, steel aqueduct, deck system, foundation improvement, and underground excavation and strutting have all been completed. The structural work of the three-level underground station (and crossovers) began prior to June 2022, and two-thirds of the work has been completed so far. The shield tunneling work of the down track from Station R01's west work shaft towards R02 Xiangshan tail track began on June 14, 2021 and September 11, 2021 for the up track. Together with the inverted path, the two tunneling works were completed by May 3 and July 9, 2022, respectively, and then began the next stage of work, the track laying work. The shield tunneling work of the up track from Station R01's east work shaft to the ventilation shaft at Yucheng Park tail track started on October 16, 2022, and on December 25, 2022 for the down track, was completed on May 31 and July 31, 2023, and are now in the inverted path construction work stage.



Birds-eye view: Xinyi eastern extension



R01 east shaft downtrack: shield machine disassembling



R01 west shaft down track: track laying



Station R01: structure work

❖ Section contract CR580C (contract CR380E - E&M and HVAC systems construction of Station R01)

- The projects of this contract include a low-voltage system, UPS system, lighting system, power for general use, fire alarm system, phone line, grounding system, water supply system, sewage discharge system, fire extinguishing system, HVAC machines and installation, creation and installation of wind pipes, creation and installation of water pipes, power system, control system, computer control and monitor system, and reserved pipelines, among others. Working this year with the Department of Urban Development, the progress included handover of E&M at the Exit A & C interface, pipeline work at Exit A & C, pipe embedding work at the equipment and concourse levels, water chiller work at the joint development building rooftop, inspection of the low-voltage switchboard, MCC boards, and water chiller, and arrival and installation of jet fans.



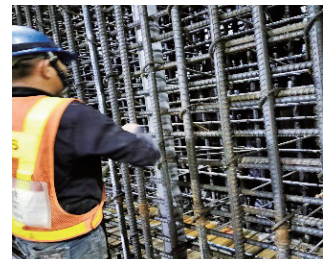
Performance test of the low-voltage switchboard



Performance test of the water chiller



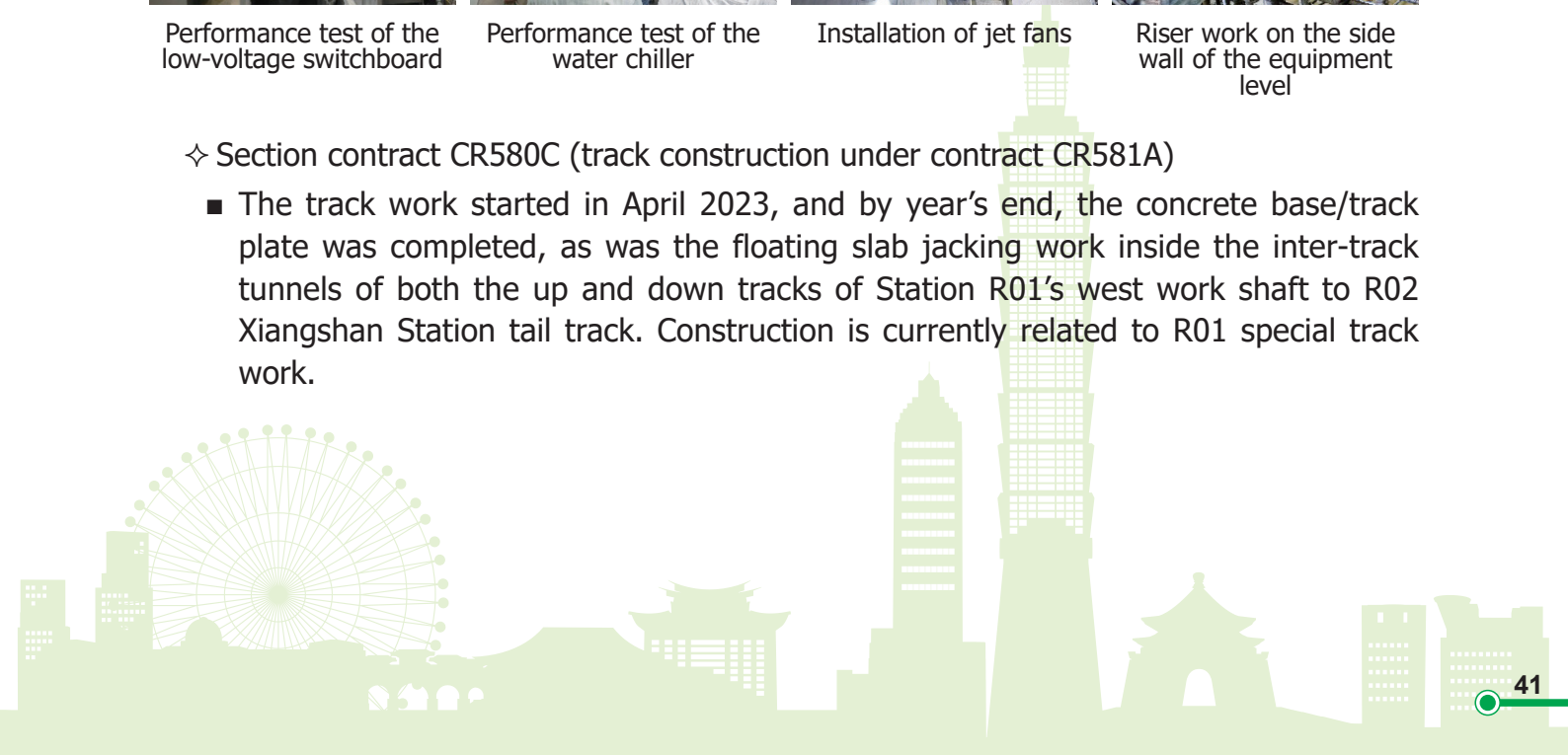
Installation of jet fans



Riser work on the side wall of the equipment level

❖ Section contract CR580C (track construction under contract CR581A)

- The track work started in April 2023, and by year's end, the concrete base/track plate was completed, as was the floating slab jacking work inside the inter-track tunnels of both the up and down tracks of Station R01's west work shaft to R02 Xiangshan Station tail track. Construction is currently related to R01 special track work.





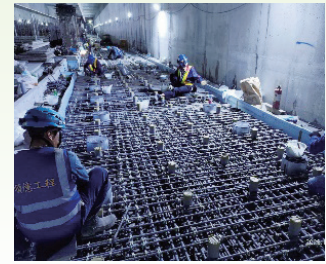
Ballastless bed work for the up track in the tunnel of Xiangshan Station tail track



Ballastless bed completion for the down track in the tunnel of Xiangshan Station tail track



Completion of floating slab track construction and jacking in the tunnel of Xiangshan Station tail track



Station R01 special track construction

◇ E&M system construction of the Xinyi eastern extension

- This construction consists of the CR382A signaling system contract, CR383A power supply system contract, CR385A communication contract, and CR387A AFC contract. Detailed designs are under review and manufacturing. The progress of each contract is described below.
- CR382A - Signaling system
 - The signaling construction contract was awarded on June 29, 2018, signed on July 26, and started on September 1. The substantial completion date was expected to be January 19, 2024, with the final completion date July 19. Currently, the completion date has been extended for a second time, due to the server room for Station R01 not meeting acceptable standards.
 - Design documents' review, equipment manufacturing, and inspection of arrivals are all in progress.
- CR383A - Power supply system
 - The power supply construction contract was awarded on April 19, 2018 and signed on May 11 with a start date of June 1. The substantial completion date was expected to be January 21, 2024, with a final completion date of July 19. Currently, the completion date has been extended for a second time, due to the server room for Station R01 not meeting acceptable standards.
 - Design documents' review, equipment manufacturing, and inspection of arrivals are all in progress.
- CR385A - Communication systems
 - The communication construction contract was awarded on May 4, 2018. It was signed on May 30 and started June 27. The substantial completion date was expected to be November 21, 2023, with the final completion date May 19, 2024. Currently, the completion date has been extended for a second time, due to the server room for Station R01 not meeting acceptable standards.

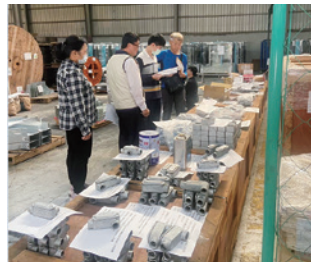
- Design documents' review, equipment manufacturing, and inspection of arrivals are all in progress.
- CR381A – EMU procurement
 - The procurement was awarded on October 28, 2022, signed on November 28, and expected to commence on January 4, 2023. The substantial completion date is expected to be April 30, 2027, with a final completion date of June 30, 2028.
 - Design documents are being reviewed.
- CR387A - Automatic fare system
 - The construction of the automatic fare system contract was awarded on May 29, 2018, signed on June 28, and started on August 2. The substantial completion date was expected to be October 23, 2023, with the final completion date April 22, 2024. Currently, the completion date has been extended for a second time, due to the server room for Station R01 not meeting acceptable standards.



Eighth equipment inspection of the contract CR382A platform doors



Fifth equipment inspection (electric remote-control system) of contract CR385A



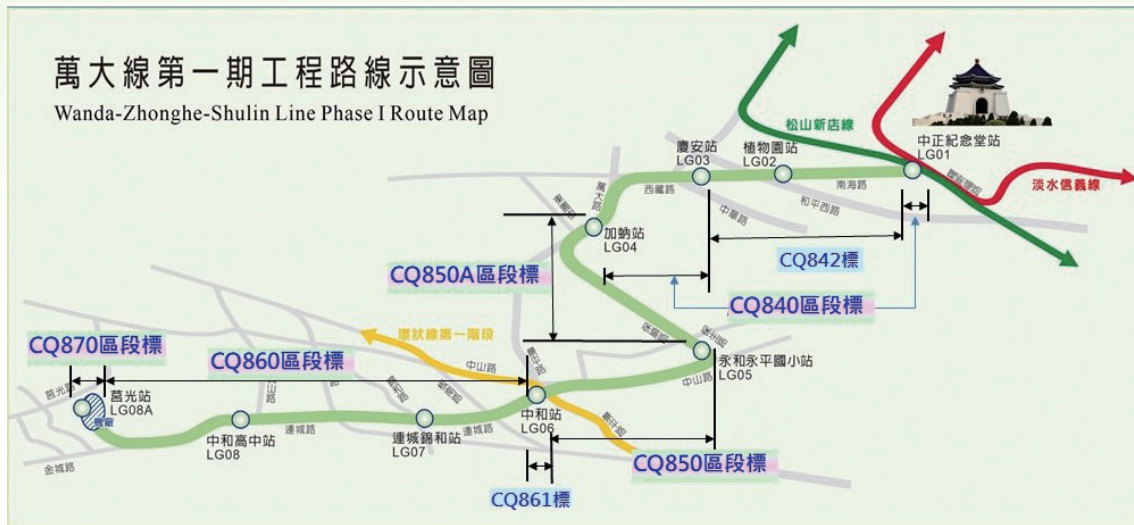
Fourth equipment inspection of contract CR385A



Arrival inspection of the auto-fare machine under contract CR387A

Wanda Line (Phase I)

This route begins at Chiang Kai-shek Memorial Hall Station, runs westward under Nanhai Road, and passes through Heping West Road before connecting to Xizang Road and turning onto Wanda Road. The route then crosses the Fruit and Vegetable Market and the Xindian River and runs along Baoshun Road and Baosheng Road in New Taipei City before turning onto Zhongshan Road, Liancheng Road, and Jincheng Road. A depot has been established in the agricultural area located north of Jincheng Road, while a branch line station has been established adjacent to Juguang Road. The entire route is 9.5 km long (8.8 km along the main line and 0.7 km along the branch line), with a total of nine underground stations and one depot.



Wanda Line Phase I Route Map

➤ Planning of MRT stations

✧ The locations of the MRT stations are as follows:

- Chiang Kai-Shek Memorial Hall Station (LG01/R08/G10): Located beneath Nanhai Rd. on the west side of Roosevelt Rd. (connects with the Tamsui-Xinyi line and the Songshan-Xindian line).
- Taipei Botanical Garden Station (LG02): Located beneath Nanhai Rd. on the east side of Heping W. Rd.
- Xiaan Station (LG03): Located beneath Xizang Rd. on the east side of Zhonghua Rd.
- Kalah Station (LG04): Located beneath Wanda Rd. between Changtai St. and Dongyuan St.
- Yonghe Yongping Elementary School Station (LG05): Located beneath Baosheng Rd. in front of the Yongping Elementary School.
- Zhonghe Station (LG06/Y11): Located beneath Liancheng Rd. on the west side of Jingping Rd. (transfers can be made to the Circular line).
- Liancheng Jinhe Station (LG07): Located beneath Liancheng Rd. on the east side of Jinhe Rd.
- Zhonghe Senior High School Station (LG08): Located beneath Liancheng Rd. on the west side of Yuanshan Rd.
- Juguang Station (LG08A): Located on the depot site on the south side of Juguang Rd.

➤ Revision

✧ The revision was submitted to MOTC on September 4, 2023 and reviewed in the preliminary meeting on November 17, 2023.

➤ Construction progress

◇ Section contract CQ840 (contract CQ841 - civil works for Station LG01):

- This section contract commenced on February 6, 2017 and includes CQ841 civil works, CQ843 civil works, and CQ814A E&M and HVAC systems construction throughout a construction period of 2,892 days. The work is expected to be completed by July 26, 2025. LG01 is an underground two-story, island-type platform station on Nanhai Rd. close to Roosevelt Rd. Sec.1, interchangeable between Chiang Kai-shek Memorial Hall Station, and connected by an underground passage tunnel. The base plates of the station and concourse level have been completed, with the concourse side walls and top plate under construction.



Rebar tying work of the concourse side walls at Station LG01



Assembly and installation of the formwork of the concourse side walls at Station LG01



Rebar tying work of the concourse plate at Station LG01



Concrete placing of the concourse plate at Station LG01

◇ Section contract CQ840 (contract CQ843 – civil works for Station LG03 and shield tunnels):

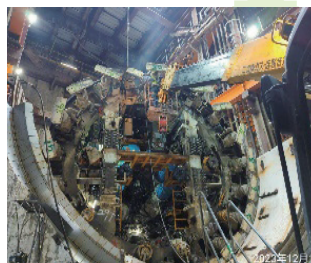
- LG03 is an underground two-story, island-type platform station under Xizang Rd. in front of Zhongyi Elementary School, about 390m away from Station LG02 and 484m from the pocket track. The LG03 station body has been completed, with works to restore a box culvert for drainage and building decoration; except for the work shafts for the north/south tunneling, the pocket track has also been completed; the pocket track to LG04 down track tunneling has been completed (shield machine at destination point by July 31, 2023); machine assembling was completed and began to proceed towards LG03 from pocket track on January 8, 2024.



Ceiling mud work in the non-public zone at LG03



Installation of the driver to shield machine



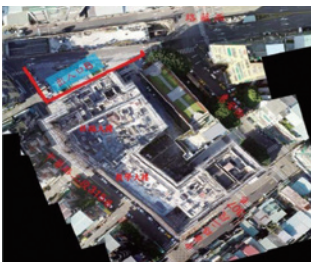
Installation of shield machine, jack thruster



Welding work of the shield machine shell

◇ Section contract CQ840 (contract CQ843B “Zhongyi Educational Social Welfare Park and Joint Development Building Construction”):

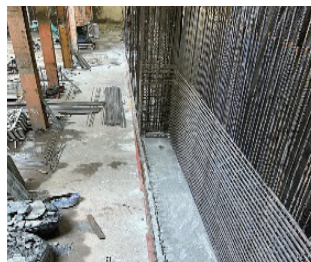
- The work covers Social Welfare and Teaching Buildings and the Station LG03 Exit B co-structure. The six-floor RC Social Welfare Building will extend one level underground, while the Teaching Building will be a five-floor RC structure, with one level underground. The work for the Teaching Building structure has been completed, and the Social Welfare Building 6F structure and LG03 Exit B-B2F side wall structure are now being processed.



Birds-eye view: CQ843B work site



Social Welfare Building 6F structure work



Exit B-B2F structure work



Exit B-B2F diaphragm wall opening removal work

◇ Section contract CQ840 (contract CQ814A E&M and HVAC systems construction)

- This construction covers the hydropower engineering work for Station LG01-LG03 (including in the tunnels between Station LG01 and LG04), which includes the dry chemical extinguishing system, drainage system, lifting equipment, lighting and socket system, fire hydrant system equipment, low pollution gaseous fire suppression system, water supply system, sanitary equipment and sewage equipment, low-voltage power distribution system, UPS system, low-voltage grounding system equipment, main and branch systems, fire alarm systems, telephone systems, access control systems, the HVAC machinery and its installation, wind pipe and water pipe manufacturing and installation, power system, control system, etc. The progress of each station is aligned with the respective civil work contracts and will enter into pipe embedding, and for station LG02-LG03, the next stage will include the wind pipe system, soundproof material for the server room, electrical system, power supply system, open conduit distribution for the drainage system, and arrival of air conditioning equipment and cables.



Drainage work at the concourse level of Station LG01



Soundproof work for server room at equipment level, Station LG02



Galvanized steel pipes arrived at Station LG03



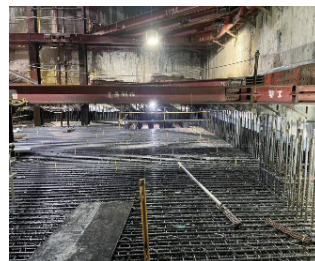
Installation of ventilation pipes, platform level, Station LG03

◇ Contract CQ842 (civil works for Station LG02 and a shield tunnel):

- This contract section commenced on December 11, 2014. The works consist of civil construction (station, tunnel, and the foundation construction of Mandarin Experimental Elementary School), relics rescue, Mandarin Experimental Elementary School substation construction, and planting works. Station LG02 is an underground three-story, island-type platform station. After being extended, the construction period is 3,944 days, with work expected to be completed by September 27, 2025. Since Station LG02 location is within a Botanical Garden Site, with the 2,000-year-old "Botanical Garden Culture" and 4,000-year-old "Xuntangpu Culture" buried beneath it, the first priority is to maintain the completeness of the historical remains and preserve cultural relics. An archaeological team first entered the historical site to carry out excavation works in conjunction with traffic management and fence erections. By June 25, 2018, the cultural heritage site excavation and preservation work were both completed. The ground structure of the joint building at Mandarin Experimental Elementary School was completed on March 31, 2021. By the end of 2023, the LG02-LG01 up/down track tunnels, the LG02-LG03 up/down track tunnels, the inverted part, and walking paths were completed. Besides the east and west work shafts, the main structure of the stations and the west work shaft side walls of the concourse level are completed, and the teams are working on the top plate. Equipment laminates were completed for the east work shaft, and the teams are working on the side walls at the equipment level.



Birds-eye view of the CQ842 construction site



Prework for concrete placing at the equipment level of station east work shaft



Walking path work inside the shield tunnel between Station LG02-LG03 up track



Station LG02-LG03 up track work completed for the walking path in the shield tunnel

◇ Section contract CQ850 (contract CQ852 civil works for Station LG05 and a shield tunnel):

- The section contract commenced on January 19, 2016, and is expected to be finished by March 31, 2026, for a total of 3,725 work days. The 1,548m work started from Yonghe Yongping Elementary School (Station LG05), along Baosheng Rd., Zhongshan Rd., and Liancheng Rd. before arriving in Zhonghe Station (excluding Station LG06.) The 213m by 33.5m underground three-story, island-type platform station has two exits (A & B), two ventilation shafts (X & Y), one accessible elevator, and two up and down shield tunnels of a minimum curvature of R51m and R57m,

which are 1,370m and 1,384m, respectively, with two cross passages (CP6 & CP7) in between. The projects completed in 2022 include the station platform level, concourse level, three-quarters of the concourse mezzanine, and structure work for the CP6 vent shaft and B2F plate. The teams are currently working on LG05 partitioning structures of all levels, decorations, B1F side wall structure of the CP6 vent shaft, and excavation work of up/down track tunnels. The down track tunnel is expected to reach Station LG06 by the end of January 2024 and the up track tunnel to LG06 by the end of April of the same year.



Shield tunnel advancing along the down track



Station shaft for light and ventilation



Painting work for partition wall at Station LG05



CP6 vent shaft B1 plate concrete placing work

◇ Section contract CQ850 (contract CQ814B E&M and HVAC systems construction)

- The E&M works involve dry systems, drainage, lifting gears, lightings, outlets, hydrants, gaseous fire-extinguishers, water supply, sanitary facilities, sewers, low-voltage power distribution, UPS, low-voltage grounding equipment, mains and branches system, fire alarms, telephones, door access; the HVAC works include machinery and equipment installation, wind/water pipe creation and installation, the power system, and the control system. Currently, the works are following the civil construction contract and are expected to begin pipe embedding and open pipe works at Station LG05, with A/C units planned to arrive.



Platform exhaust pipe installation



Server room pipe work handover



Placement of AHU at the platform level



Placement of the water chiller

◇ Section contract CQ850A (contract CQ851 civil works for Station LG04 and shield tunnels):

- The work started on December 31, 2016 and involves a three-story underground island-type platform, one shield tunnel with four cross passages, E&M and HVAC,

and common pipe lining. All work is expected to be finished by October 23, 2025, totaling 3,219 work days. The teams are working on the station's south shaft structure, work passages, and cross passages in the up/down track tunnels. The rest of the section contract has been completed.



Structure work for the south shaft



Walking path work inside tunnel



Station restoration work



Partition wall work inside station

◇ Section contract CQ850A (contract CQ814G E&M and HVAC systems construction)

- The construction covers hydropower engineering work, which consists of the dry chemical extinguishing system, drainage system, lifting equipment, lighting and socket system, fire hydrant system equipment, low pollution gaseous fire suppression system, water supply system, sanitary equipment and sewage equipment, low-voltage power distribution system, UPS system, low-voltage grounding system equipment, main and branch systems, fire alarm systems, telephone systems, and access control systems; the HVAC work includes machinery and its installation, wind pipe and water pipe manufacturing and installation, power system, control system, etc. The progress of each station is aligned with their civil work contracts and, in 2023, work continued on to the station wind pipe system, soundproof material for server room, electrical system, power supply system, water and drainage systems, factory testing, and arrival of AHU and cables.



A/C wind pipe work at the platform level



Pipe distribution for track lighting; OTE ventilation pipe work



AHU arrival at the equipment level



Soundproof work in the server room

◇ Section contract CQ861(civil works for Station LG06)

- LG06 is a four-level underground stacked platform station. Civil works commenced on December 2, 2014 under contract CQ861. With two exits, A&B, along Liancheng

Rd. and interchangeable to Zhonghe Station (Y11) on the Circular line through the underground pass, the station is 148.2m in length and 20.45m in width and comprises an 80m platform. The excavation goes as deep as 30.9m-33.9m.

- The diaphragm wall of Station LG06 was completed by July 28, 2018; on November 5, the work site shifted to the center of Liancheng Rd. for the station's partitioning structure, Exit A on each level, decoration, and laminate structure at the upper platform of Exit B.



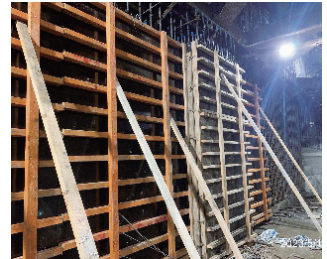
Sidewall completed at B1 concourse level of Station LG06



Rebar tying for buttress of escalator from B2 to platform level at Station LG06



Rebar tying for partition wall at B1 concourse level of Station LG06



Assembly and installation of the side wall formwork of the B3 equipment level, Exit B, Station LG06.

✧ Section contract CQ861 (E&M and HVAC systems construction for Station LG06)

- Contract CQ814F (under section contract CQ860) involves the HVAC of Station LG06 and is now working on pipe embedding for drainage, arrival and positioning of the low-voltage switchboard in the server room, wind pipe system, power sockets, and pipe distribution for lightings.



Wind pipe and electrical conduit work at low-voltage substation, Station LG06



Wind pipe and electrical conduit work at battery room, Station LG06



Switchboard placement and installation at low-voltage substation A, Station LG06



Exhaust pipe and OTE wind pipe installation, upper platform, Station LG06

✧ Section contract CQ860 (civil works for Station LG07, LG08 and shield tunnels)

- Construction commenced on October 15, 2015. The entire section is under ground, including two underground stations, LG07 and LG08, two sections of cut-and-cover tunnel, and three sections of shield tunnel, totaling seven subsections of work: (1) civil works: CQ861A, CQ862, CQ863, CQ863A, CQ872; (2) E&M and HVAC systems construction: CQ814C, CQ814F.
- Civil works progress includes three sections of shield tunnel excavations. The teams

are working on the final part of the inverted path of the tunnel, the structure of the cut-and-cover sections at Station LG07, the pocket track, and Exit B; Station LG08, Exit A, and Jincheng Rd. Sec. 3; and Station LG07 decoration.



Up/down track tunnel completed for LG07-LG06



Structure formwork adjustment for Station LG07 sidewall



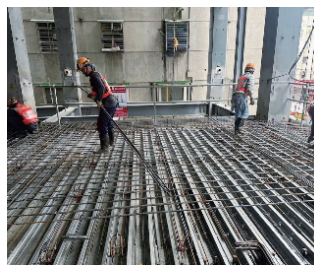
Decoration work inside Station LG07



Underground structure work, Station LG07 Exit B



Steel structure erection completed for Station LG08 Exit A



Steel deck work at Station LG08 Exit A



Down track tunnel completed for Station LG08 cut-and-cover section



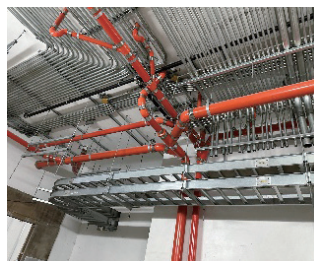
Up/down track tunnels completed at the cut-and-cover branch

✧ Section contract CQ860 (Station LG07, LG08, and in-tunnel HVAC work)

- Contract CF814C involves the HVAC work for Station LG07, LG08, and tunnels. Following civil work progress, the teams are working on pipe embedding, wind pipes, power sockets, and the electrical conduit for the station's lighting and in-tunnel fire pipelines.



Server room wind pipe and electrical conduit work at the equipment level, Station LG07



Pipeline work and installation for all systems, equipment level, Station LG07



Fire extinguishing pipe and drainage pipe work, Station LG07 - LG08 tunnel



B1F grounding pipe embedding, Station LG08 Exit A

✧ Section contract CQ870 (civil works for Jincheng Depot and Station LG08A)

- This section contract includes a depot, an underground station, and a cut-and-cover tunnel, with a total area of 11.82 hectares. Jincheng Depot is located east of Yanshou Rd., Tucheng District, north of Jincheng Rd., and south of Juguang Rd.,

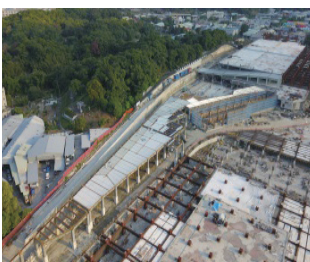
Zhonghe District. Station LG08A is 227m in length, 19m in width, and 15m high and is composed of two underground levels. It is located northwest of the depot, with a 390m cut-and-cover tunnel as a linking passage between Jincheng Depot and the station.

- The five subcontracts under CQ870, which commenced on December 15, 2017, are (1) civil works: CQ871 depot work, CQ872B station work, CQ874A greenery work; (2) HVAC construction: CQ814D; and (3) elevator/escalator work: CQ816 (including CQ816A, CQ816B, CQ816C, and CQ816D).
- The construction work in each of the six areas of this section contact is as follows:



Construction area zoning

- East side of road (section 1): Structure of the basis of an artificial platform.
- Stabling yard (section 2): Beam plate for the 1F peripheral area of the stabling yard and 1F of roundhouse; top plate structure work at TK501 daylight section.
- Station LG08A (section 3): Concourse level, platform level partitioning, Exit B, and ventilation shaft X structure work.
- Cut-and-cover tunnel area (section 4): Type 1 material refill.
- Control center area (section 5): BSS, control center building, ventilation shaft work.
- Maintenance yard (section 6): beam plate structure at 1F & 2F, TK101-104 track installation, and TSS structure.



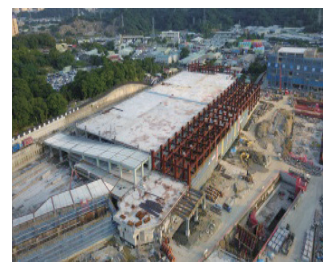
Birds-eye view of the east section



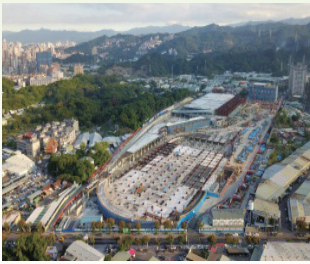
Birds-eye view of the stabling yard and roundhouse area



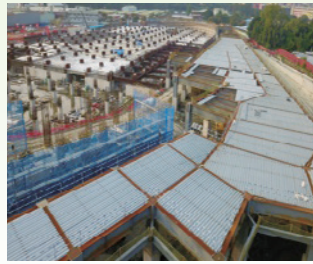
Birds-eye view of the control center



Birds-eye view of the maintenance yard



Full scape of Jincheng Depot



Structure work for the artificial platform



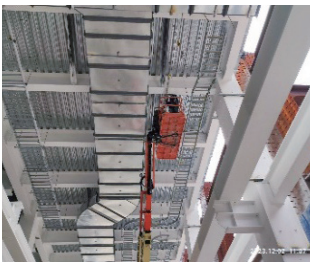
Maintenance yard track work



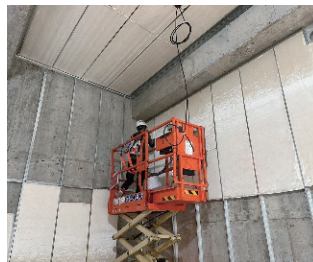
Drainage work for the ground of the roundhouse

✧ Section contract CQ870 (E&M and HVAC system construction)

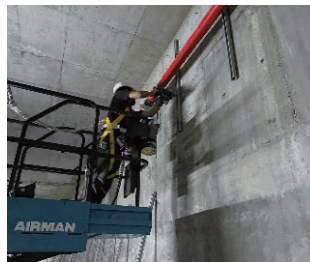
- Following CQ870 progress, CQ814D has completed MS3 "Station LG08A low-voltage switchboard testing and supply preparation work" and MS8 "stabling yard low-voltage switchboard testing and supply preparation work." Along with the civil works, the LG08A is completing the HVACs of each section and the HVAC of all the depot areas. The teams have also aligned key progresses with the civil work contract and handed over on-site work conditions for relevant systems contracts, as well as the CQ814D contracted key progresses. The teams are currently working on pipe distribution, cable placing, and system installations.



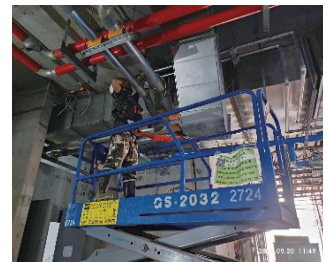
Lighting pipe distribution for the maintenance yard



Soundproofing at the control center



Mainline tunnel fire extinguishing pipe work



LG08A fire extinguishing pipe work at the concourse level

✧ Contract CQ811 track work

- The work commenced on August 9, 2018. By 2023, the following work has been completed: the concrete foundation and the upward jacking of the floating slab for part of the track between Station LG08 and LG08A; the concrete foundation/track plate of all tracks between Station LG06 and LG07; resistance welding for steel tracks between Station LG06 and LG08A, as well as for the Jincheng Depot section. The teams are working on resistance welding between Station LG01 and LG03 of the Taipei section, the switch track installation for the floating slab of Station LG08A, and the concrete foundation for the tracks between Station LG08 and LG08A



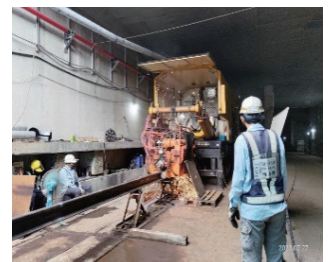
Installation of switch track floating slab between Station LG08 and LG08A



Floating slab completed between Station LG06 and LG07



Ballastless bed concrete foundation work between Station LG08 and LG08A



Jincheng Depot section steel track flash-butt welding work

◇ Overseas inspection of EMUs under Contract CQ810, Wanda line

- In April 2023 at Charleroi Factory in Belgium, the test on static inverters was to verify whether the design met the requirements.
- In May 2023 at the Alstom Factory Lab in Shanghai, the test on the propulsion system was to verify whether the VVVF controller and the traction motor function aligned with the traction power and performance required in the contract and whether the propulsion system worked under the required working environment stated in the contract, including electromagnetic interference, water tightness, and noise, among others.
- In June 2023 at Le Creusot Lab in France, a test was run to verify the fatigue strength of the bogie frame. It ensured that no fatigue cracks occurred following two million cycles of overall loading to the same single bogie after the static strength test, thus confirming the bogie frame structure is designed to withstand the contract requirement.
- In November 2023 at La Rochelle Lab in France, a weather simulation test was carried out on an actual assembled carriage to verify that the design of the A/C system meets the contract requirements both for the daylight section and the tunnel section.



EMU static inverter testing



Integration test for the propulsion system



Bogie frame structure fatigue test



A/C weather simulation test

◇ Overseas inspection for Wanda line signal system under contract CQ810

- In December 2023, the test at the manufacturer at Ötzingen, Germany, on the first batch of the switch machine (hardware components) verified that its characteristics, function, and quality are meeting the special requirements stated in the contract.
- Following the briefing on the factory test, environment settings, quality assurance flow, and basic safety rules by the Voestalpine project manager of the switch machine, a guided tour around the factory gave full description of equipment installation, tests, packaging, and shipping.
- The tests ensured the strength and firmness of the connecting points and cables and that the driving forces from both ends are within test procedure specifications. The switch machines function properly and can be operated manually, with no abnormal sound or hydraulic oil leaks during operation, and the design of the

machine meets contract requirements.



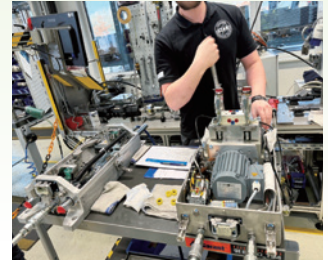
Agenda briefing



Factory guided tour



Function test



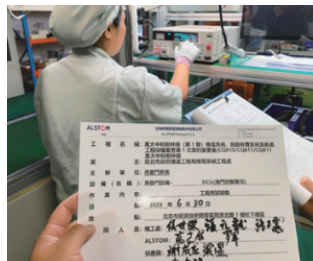
Hands-on operation

◇ Overseas inspection for Wanda line platform door under contract CQ810

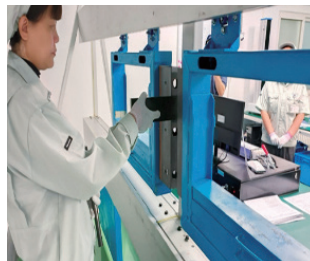
- From June 28 to July 7, 2023, at the Panasonic Factory, Daxing District, Beijing, testing was carried out to verify that the design and functions of the door control unit (DCU) for the CQ810 platform door contract of Wanda line Phase I meet the P.T.S requirements and the design documents.



Specific spot voltage measuring



Hipot test



Obstruction detection test



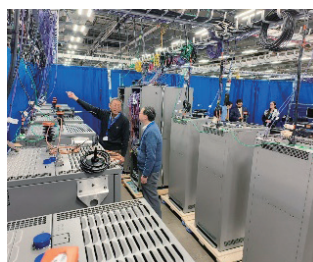
Data logger (surface temperature of magnetic lock)

◇ Overseas inspection for Wanda line digital radio system under contract CQ810

- In March 2023 at the Motorola Factory in the US, tests were carried out to verify that the characteristics, function, and quality of the digital radio system equipment meet the P.T.S requirements.
- Followed by the introduction of the environment, quality assurance flow, and basic safety by the project manager, a guided tour around the factory gave full description of the equipment installation, tests, packaging, and shipping.
- Appearance inspection, function and performance tests, and compatibility tests are made to the system equipment.



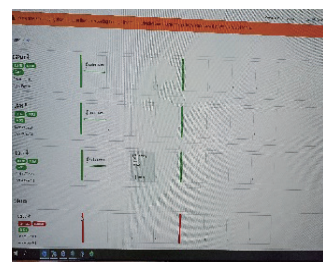
Factory guided tour



Equipment inspection



Function and performance test

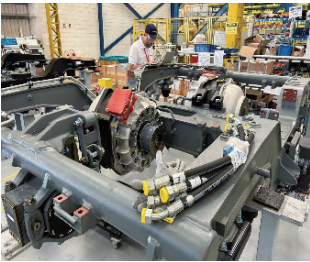


Cell site compatibility test

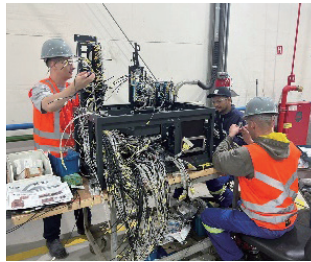
◇ Contract CQ810/CQ817 E&M system works

- The contract was signed on July 10 and work commenced on August 9, 2018. The substantial completion date is scheduled for December 31, 2027, with a contract completion date of June 30, 2028. Contract review, detailed design, and equipment manufacturing are underway. All subsystems in progress are described below.
- EMU
 - Subsystem detailed design
 - Prototype testing of subsystems
 - Prototype on-site supervision
 - First train manufacturing and assembling
 - Manufacturer self-test before shipping of the first train
- OCS
 - OCS and platform door detailed design
 - Overseas factory testing for the first batch of OCS switch machines
 - Overseas testing for OCS platform door subsystem door control units
 - DSER and CER cable ducts fitting
 - Moon rack factory testing completed
- Power supply
 - Detailed design for all systems and station / outside station equipment layout inspection
 - In-Taiwan factory testing for Jincheng Depot equipment
 - Jincheng Depot: BSS 161kV GIS installation and 161/22kV main transformer assembly
 - 161kV cable placing between Taipower Banqiao substation and Chengjie BSS
 - DC power equipment arrival and assembly at Jincheng Depot TSS
- Communication system
 - Detailed design for communication systems
 - Final design for communication systems
 - Factory tests for communication systems
- Depot facilities
 - Technical document review
 - Detailed design for all equipment
 - Overseas factory tests for underground jacking system, bogie lifting ramp, and spin table
- Factory tests for Stinger System for Depot
 - Arrival of underground jacking system, bogie lifting ramp, spin table at maintenance yard temp storage area

- Factory tests for in-maintenance yard crane
- Automatic fare system
 - Paper review of common, detail, and final design
 - Prototype tests
 - Technical document review
 - Detailed designs of equipment



Bogie assembling work



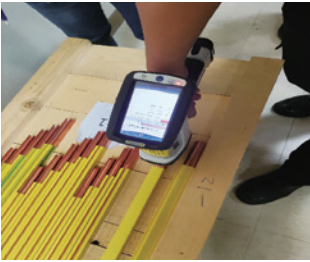
Rack pre-assembly



Continuity check



First train appearance



Depot equipment- Stinger factory testing



Underground jack arrival at Jincheng Depot as temporary storage



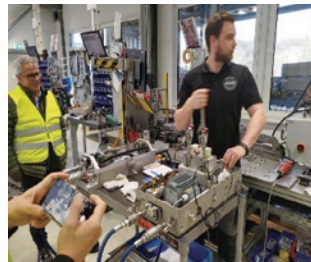
Depot equipment – factory test for crane



Moon rack factory test



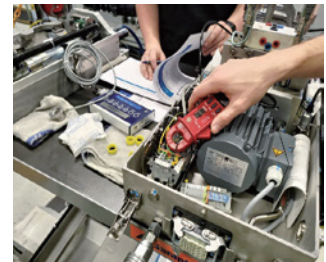
Moon rack wire connection



Switch machine -manual switch test



Switch machine - hydraulic pressure test



Switch machine - drive current measuring



Telecommunication system and CCTV testing at the manufacturing plant



Telecommunication system radio equipment testing at the overseas manufacturing plant



Automatic fare system – SPS station process prototype testing



Automatic fare system - Automatic fare machine prototype testing

Wanda Line (Phase II)

Phase II for the Wanda line connects the routes undergoing construction in Phase I along Jincheng Rd., then goes to the elevated section after passing Mingde Rd., continues to run along Jincheng Rd., crosses over the Chenglin Bridge to reach Zhonghua Rd. in Shulin, then runs to Bade St. and Daan Rd., and turns onto Zhongzheng Rd. to link directly to the Xinzhuang line at Huilong Station. The 13.3km Wanda line Phase II comprises two underground stations and 11 elevated stations.



Wanda line route map

➤ Planning of MRT stations

✧ The locations of the MRT stations are as follows (for reference only; actual locations of LG09-LG13 are subject to final urban planning revisions):

- LG09: Located near the intersection of Jincheng Rd. Sec. 3 and Yanhe Rd.
- LG10: Located underneath Jincheng Rd. near Zhongzheng Junior High School
- LG11: Located at Jincheng Rd. Sec.1, inside Jincheng Park (with transfer to the Tucheng line at Tucheng Station)
- LG12: Located near the intersection of Jincheng Rd. Sec.1 and Zhongyi Rd.
- LG13: Located near the intersection of Zhonghua Rd. and Chenglin Rd.
- LG14: Located near the intersection of Xicheng Rd. and Zhonghua Rd.
- LG15: Located near the intersection of Bade Rd. and Zhonghua Rd.
- LG16: Located near the intersection of Bade Rd. and Daan Rd.

- LG17: Located on Daan Rd. near the Shu Jen High School of Home Economics & Commerce
- LG18: Located near the intersection of Daan Rd. and Zhongzheng Rd.
- LG19: Located near the intersection of Zhongzheng Rd. and Guangwu St.
- LG20: Located near the intersection of Zhongzheng Rd. and Sanjun St.
- LG21: Located on Zhongzheng Rd. near Huilong Station (with transfer to the Xinzhuang line)

➤ **Urban planning revisions**

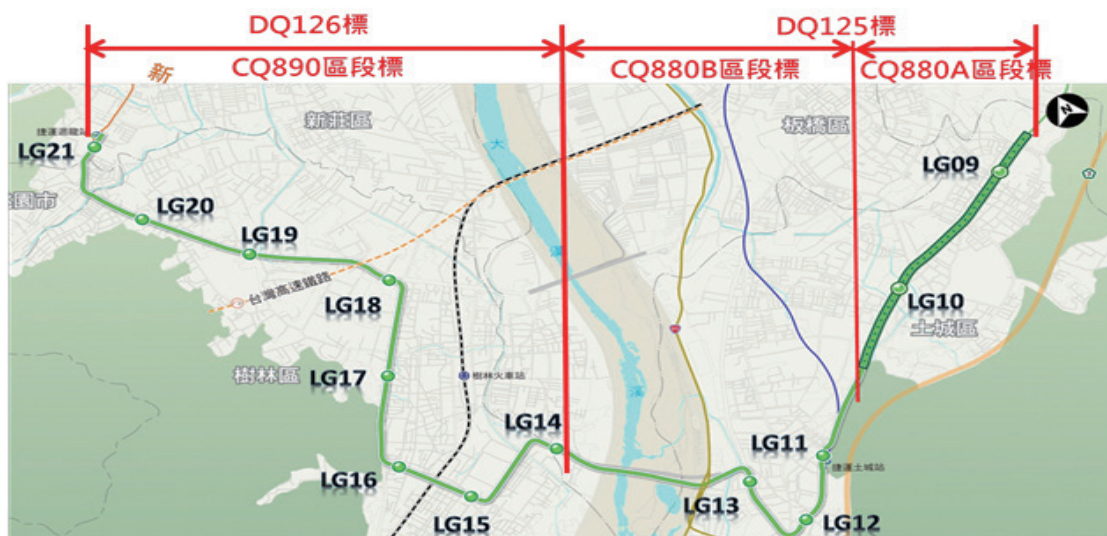
✧ The route in Phase II is located in New Taipei City and involves five urban planning areas. With the exception of Station LG11, urban planning revisions have been submitted to the MOI's urban planning committee (UPC) and were approved during the 982nd meeting on December 8, 2020. However, due to content inconsistencies compared to open-reviewed documents, all documents were reopened for review for 30 days from April 27, 2021, and four instruction meetings were arranged. Tucheng urban planning (Station LG10 and LG12) passed New Taipei City's 1042nd UPC on September 26, 2023 and was forwarded to the MOI's UPC for review.

➤ **Revision**

✧ The revision was submitted to the MOTC on May 19, 2023. The MOTC convened a preliminary review meeting and a review committee meeting on August 4 and October 23, respectively.

➤ **Quick view of detailed design progress**

✧ The detailed design of Wanda line Phase II includes design contracts DQ125 and DQ126. Descriptions are below.



Wanda line Phase II construction area

◇ Design contract DQ125

■ Contract Scope

- The DQ125 design contract extends 6.66km and consists of both underground and elevated sections. The underground section starts at the west side of Station LG08's cut-and-cover tunnel, which is part of Wanda line Phase I and ends at the daylight section of Jincheng Rd. of Tucheng Dist. It includes two underground stations (LG09 and LG10), three shield tunnels, and a cut-and-cover section (which includes the cut-and-cover tunnel and the daylight section), spanning a total of 2.84km. Except for the two cut-and-cover underground stations and the cut-and-cover tunnel, the remaining areas adopted the shield boring method. The elevated section begins at the daylight section, proceeds along Jincheng Rd. onto Zhonghua Rd. in Tucheng Dist., turns along the south of Chenglin Bridge, crossing the Dahan River to Xicheng Rd. in Banqiao Dist., and stops at Station LG14 (exclusive); it includes three elevated stations (LG11, LG12 and LG13) and an underground bulk supply substation (BSS), spanning a total of 3.82km



Wanda line Phase II contract DQ125 area

- Progress of the detailed design of the main construction: 99.9%.
- Detail designer: Sinotech Engineering Consultants
- Progress:
 - The open tender was announced on April 15, 2019 and was awarded on July 8. Detailed design began on July 11, and the contract was signed on July 23, 2019. The first review was submitted on February 5, 2020, and the final phase of construction was submitted for review on May 4, 2020. Tender documents of the section contract were submitted on September 15, 2020, and section contract CQ880 was approved on December 30, 2020. Contracts failed to be sold several

times, so in 2022, the procurement project was divided into CQ880A and CQ880B to facilitate tendering.

◇ Design contract DQ126

■ Contract scope

- The contract begins at the elevated Station LG14 (inclusive) and goes to Zhonghua Rd., Shulin Dist. stopping at Station LG15 at Bade St., then goes along Bade St., stops at Station LG16 at Daan Rd., and continues on Daan Rd. toward Station LG17 near the Shu Jen High School of Home Economics & Commerce, after which it turns onto Zhongzheng Rd., Shulin Dist. It then stops at Station LG18, the south side of Zhongzheng Rd., and Station LG19 is located above Zhongzheng Rd., near the Guangwu St. entrance. Station LG20 is above Zhongzheng Rd., near the Sanjun St. entrance. The line proceeds along Zhongzheng Rd., turns at Wanshou Rd. Sec. 1 in Taoyuan City, and arrives at Station LG21 on Zhongzheng Rd. near Huilong Station in Xinzhuang Dist. At Station LG21, transfers can be made to Huilong Station on the Xinzhuang line and Taoyuan MRT brown line, comprising a total of eight elevated stations and a total route length of 6.62km.



Wanda line Phase II contract DQ126 area

- Progress of the detailed design for the main construction: 99.996%.
- Detail designer: Joint tender by Sinotech Engineering Consultants and T.Y. Lin International Taiwan
- Progress:

- The open tender was announced on April 24, 2019 and was awarded on July 12. The contract was signed on July 26, and the detailed design (NTP) started on July 26. Documents for the first review began on February 20, 2020, and the final phase was submitted for review on May 20. Tender documents were submitted on September 30, and section contract CQ890 was approved on March 3, 2021. On August 17, 2022, the contract CQ890 was awarded.

➤ **Public bidding progress**

✧ Section contract CQ880

■ Construction scope

- This section contract includes the following two underground stations: Station LG09 and LG10, and the following three elevated stations: Station LG11, LG12, and LG13. It also includes civil engineering contracts CQ881 and CQ882, HVAC contract CQ824A, and Wanda line Phase II elevator and escalator construction contract CQ826A.

■ Public bidding progress

- The fourth public bidding was announced on January 21, 2022, opened on March 21, and was then failed.
- Following review, the procurement project was divided into CQ880A and CQ880B.

✧ Section contract CQ880A

■ Construction scope

- The section contract includes two underground stations: Station LG09 and LG10, civil work contract CQ881, HVAC contract CQ824C, and Wanda line Phase II elevator and escalator construction contract CQ826.

■ Public bidding progress

- The first bidding was announced on October 21, 2022, and bids were opened on December 2, after which it was failed.
- The second bidding was announced on January 19, 2023, and bids were opened on March 2. The bid was failed.
- The third bidding was announced on April 28, 2023, and bids were opened on June 9. The bid was failed.
- The fourth bidding was announced on September 8, 2023, and bids were opened on October 24. The bid was failed.
- The fifth bidding was announced on October 30, 2023, and bids were opened on November 14. The bid was awarded on December 1.

✧ Section contract CQ880B

- Construction scope
 - The contract includes three elevated stations: Station LG11, LG12, and LG13, civil work contract CQ882, and HVAC contract CQ824D.
- Public bidding progress
 - Due to budgeting, the first revision of Wanda line Phase II construction is awaiting approval.

◇ Section contract CQ890

- Construction scope
 - The following eight elevated stations: LG14, LG15, LG16, LG17, LG18, LG19, LG20, and LG21, as well as civil work contracts CQ891 and CQ892 and HVAC contract CQ824B.
- Public bidding progress
 - The fourth public bidding was announced on January 24, 2022, opened on March 9, and then was failed.
 - The fifth public bidding was announced on April 20, 2022, opened on May 25, and then was failed.
 - The sixth public bidding was announced on June 13, 2022, opened on July 26, and then was awarded on August 17.

➤ **Construction progress**

◇ CQ880A section contract

- This section contract includes the following two underground stations: Station LG09 and LG10, civil work contract CQ881, HVAC contract CQ824C, and Wanda line Phase II elevator and escalator contract CQ826. The contract was awarded on December 1, 2023 and was scheduled to begin by March 2024.

◇ CCQ880B section contract

- This section contract includes three elevated stations: Station LG11, LG12, and LG13, civil work contract CQ882, and HVAC contract CQ824D. Due to plan modifications, the contract will be outsourced upon Executive Yuan's approval of the Wanda line Phase II first revision.

◇ CQ890 section contract

- Commenced on November 11, 2022, this section contract includes three subcontracts: civil contracts CQ891 and CQ892 and HVAC contract CQ824B. The scheduled completion date is March 8, 2029. The team is working on Station LG14 foundation piles; building removal at the handed over site (for Stations LG15, LG16,

and LG17); removal of the median refuge island on Zhonghua Rd. and Bade St.; narrowing of the sidewalk on Daan Rd.; and foundation piles on Daan Rd. (P17-16 to P17-24). The 2024 progress will involve foundation piles and substructure; the reconstruction of the drainage box culvert on Zhonghua Rd. and Daan Rd.; and Taipower UHV 69kV pipeline works.



Station LG14 foundation pile work



Daan Rd. foundation pile work



Removal of existing buildings



Removal of median refuge island from Zhonghua Rd.

◇ Contract CQ810T/CQ817T E&M system work

- DORTS signed the contract to handle the Wanda line Phase I follow-up expansion methods on July 23, 2020, and construction commenced on July 31. The expected substantial construction completion date is December 31, 2028, and construction of the station is expected to be completed by June 30, 2030. Conceptual design and detailed design tasks are currently being carried out. Subsystem details are as follows.
 - EMU
 - Document review of detailed system designs
 - OCS and platform door
 - Document review of detailed system designs
 - Power system
 - Document review of detailed system designs
 - Application submitted to Taipower for 161kV feeder
 - Communication system
 - Document review of the concept designs of systems
 - Document review of detailed system designs
 - Depot facilities
 - Document review of the concept designs of systems
 - Document review of detailed system designs
 - Auto fare
 - Document review of common, concept, and detailed designs

Circular Line North & South Section

The north section starts from New Taipei Industrial Park Station (exclusive) of the Circular line and goes underground in a longitudinal slope along Wuquan Rd. of Xinzhuang, passing Erchong Floodway and running south to National Freeway 1 to Siwei Rd., Wugu, heading north past the Freeway, Sanchong, Jixian Rd., and Zhongshan 1 Rd. of Luzhou, where it meets St. Ignatius High School Station of the Xinlu line. It then runs along Jixian Rd., passing Wuhua Elementary School, Tamsui River (Chong Yang Bridge), and Shilin Station of the Tamsui-Xinyi line, then north to Chiang Kai-Shek Shilin Residence, Fulin Rd. intersection, to just south of Shuangxi Park, Zhishan Rd., to the National Palace Museum, to Mt. Wenjian, Beian Rd. of Zhongshan Dist. Here it meets Jiannan Rd. Station of the Wenhui line and pauses at the north section before turning south to Jingye 3rd Rd. for crossovers and tail track, reserving connections to the east section. The route totals 14.93 km, 12 stations (Y19A-Y29), and one depot.

The south section starts at Taipei Zoo, passes Xinguang Rd., Xiuming Rd., the triangular dorm in front of NCCU, Zhinan Rd., and Siwei Boulevard of NCCU. It then crosses the Jingmei River to Muxin Rd., Muzha Rd. Sec. 2 and the Xinglong Rd. intersection, Muzha Rd. Sec. 1 to the Xinhai Rd. intersection, and continues to the National Examination Center. Then it crosses Jingmei River again and the flood path next to the Rong Factory neighborhood, continuing onto Minquan Rd. and meeting Dapinglin Station, where a transfer is available for the Xindian line. The route totals 5.73km and includes six underground stations.



Circular line north and south section route map

➤ Planning of the MRT Stations

✧ The location of each station is as follows:

The North Section

- Station Y19A: Located underneath Wugong Rd., Wuquan Rd. Entrance, New Taipei Industrial Park
- Station Y19B: Located within a block of industrial land use, surrounded by Zhongxing Rd. Sec. 2 and Lane 37, and Wugu Floodway/southeast of National Highway No.1
- Station Y20: Located underneath Zhongshan 1 Rd. northeast of the intersection of Zhongshan 1 Rd. and Yungan S. Rd. Sec. 1
- Station Y21: Located underneath Jixian Rd., at the intersection of Zhongshan 1 Rd. and Jixian Rd., in front of St. Ignatius High School
- Station Y22: Located underneath Jixian Rd. at the intersection with Wuhua St., the border between Sanchong Dist. and Luzhou Dist.
- Station Y23: Located underneath Jixian Rd., between Chongyang Bridge and Sanxin Rd.
- Station Y24: Located underneath Shezheng Park and the parking lot, west of the intersection of Zhongzheng Rd. and Tonghe W. St. Sec. 2
- Station Y25: Located underneath Zhongzheng Rd., at the intersection of Zhongzheng Rd./Jihe Rd., in front of Shilin District Office
- Station Y26: Located underneath Zhongzheng Rd., at the intersection with the Tamsui line
- Station Y27: Located underneath Zhongzheng Rd., west of the intersection of Zhongzheng Rd. and Yunong Rd.
- Station Y28: Located underneath Zhishan Rd. Sec. 2, east of Gugong Rd.
- Station Y29: Located underneath Beian Rd., between Jingye 2 Rd. and Jingye 3 Rd.

The South Section

- Station Y1: Located underneath Xinguang Rd. Sec. 2 (southwest of Taipei Zoo Station on the Wenhua line)
- Station Y1A: Located underneath the intersection of Wanshou Rd. and Xiuming Rd.
- Station Y2A: Located underneath Wenshan Park and the road west of the intersection of Muxin Rd. Sec.1 and Muzha Rd. Sec.3
- Station Y3: Located underneath Muzha Rd. at the intersection of Muzha Rd. Sec. 2 and Lane 138
- Station Y4: Located underneath Muzha Rd. between Xinhai Rd. and Shiyuan Rd.
- Station Y5: Located within the site reserved for a public park based on the "Xindian Rong Plant Site Urban Renewal Planning and Urban Planning Revision Draft"

➤ Revision

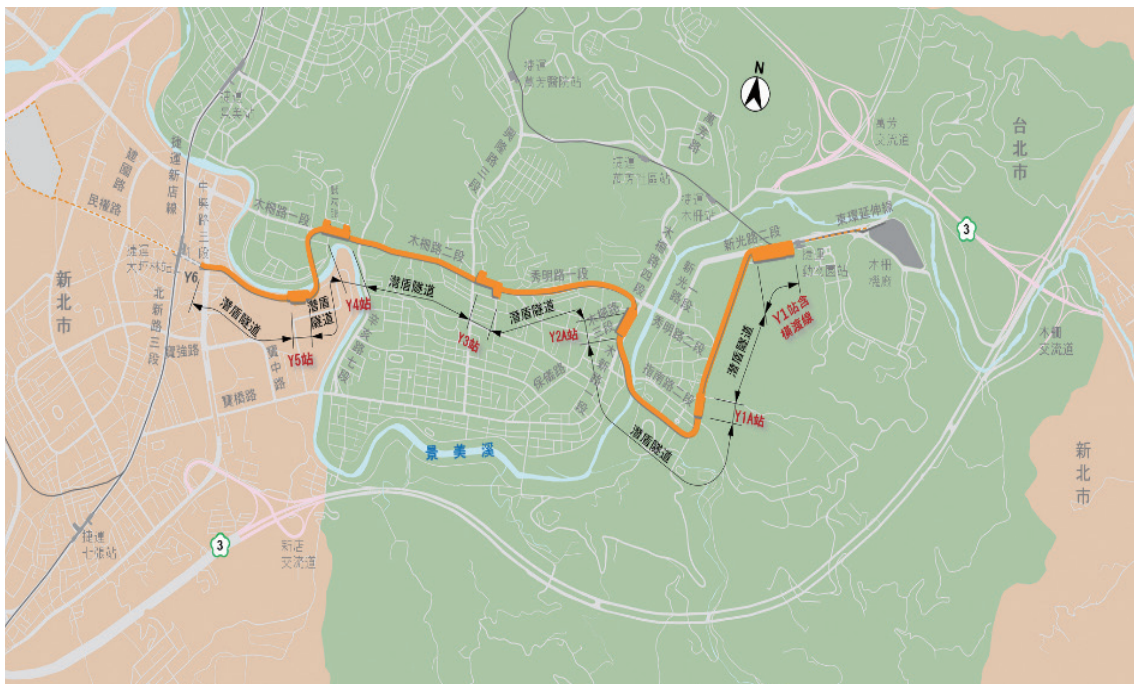
- ✧ The revision was submitted to the MOTC on June 13, 2023 and was reviewed in the preliminary meeting on August 11. Revisions were made in line with the meeting results and submitted to the MOTC.

➤ Detailed design progress

✧ Design contract DF115

■ Construction scope:

- Design contract DF115 includes Taipei Zoo Station (exclusive), which connects underground along Xinguang Rd. Sec. 2, through the mountainous area southbound to Xiuming Rd. Sec. 2, follows Siwei Boulevard in NCCU, across the Jingmei River, along the floodway next to the Far East Industrial Zone, runs west along Minquan Rd., connects Y6 Dapinglin Station (exclusive) to the east, and arrives at the construction area for Circular line Phase I. Transfers are available for the Songshan-Xindian line. This section includes six underground stations (Y1, Y1A, Y2A, Y3, Y4, and Y5) and six sections of shield tunnel along its 5.9km route.



Circular line south section DF115 contract area

- Progress of the detailed design for the main construction: 99.99%
- Detail designer: CECI Engineering Consultants, Inc., Taiwan
- Progress:
 - The open tender was announced on April 26, 2019 and was awarded on July 17. Detailed design commenced on July 19, and the contract was signed on July 31.

The first document under the contract were submitted on February 13, 2020, and the final phase document was submitted on May 13. Tender documents for the section contract were submitted on October 8 and approved on December 8, 2020. Section contract CF670A was awarded on March 15, 2023.

✧ Design contract DF116

■ Construction scope:

- Starting from Station Y19, the DF116 route runs underground along the longitudinal gradient from station Y19A on Wugong Rd., turns onto Wuquan Rd., and passes beneath Erchong Floodway toward Station Y19B, running south along National Freeway 1 until Siwei Rd., where it turns north across National Freeway No. 1, to Station Y20 at Zhongshan 1 Rd./Zhongshan 2 Rd. of Luzhou, east of the intersection of Jixian Rd. and Zhongshan Rd., through to Station Y21, which connects to O52 Station St. Ignatius High School, along Jixian Rd. to Y22 on Wuhua St., and onto Station Y23 near Wu Hua Elementary School of Sanchong. The work includes six underground stations, five sections of shield tunnel, two sections of cut-and-cover tunnel, one elevated section, one depot entrance and exit, and one maintenance depot (including a primary substation), forming a 6.41km route (excluding the 435m section leading into the depot).



Circular line north section DF116 contract area

- Progress of the detailed design for the main construction: 100%
- Detail designer: joint-tendered by CECI Engineering Consultants, Inc., Taiwan and

Moh and Associates, Inc.

■ Progress:

- The tender was announced on May 10, 2019, awarded on July 17, and signed on July 30. Detailed design commenced on August 6, with the first review on March 2, 2020, and the final phase submitted for review on May 29. Tender documents were submitted on November 17, and bidding was approved on January 25, 2021. The CF680C section contract was awarded on December 17, 2021; the CF680B section contract was awarded on December 28, 2022; and the CF680A section contract was awarded on June 26, 2023.

✧ **Design contract DF117**

■ Construction scope:

- The work started from Station Y23 (exclusive). The shield tunnel goes under the Tamsui River, passes by Chongyang Bridge onto Shezi in Shilin, and crosses the Keelung River onto Zhongzheng Rd. and Zhishan Rd., turning right and passing through Wenjian Mountain to reach Beian Rd., where it meets the Wenhua line at Jiannan Road Station before turning and stopping at Jingye 3 Rd., where the tail track is set to terminate the line. The 8.43km contract consists of six underground stations (Y24, Y25, Y26, Y27, Y28, and Y29), seven sections of shield tunnel, two sections of cut-and-cover tunnel, and two escape shafts.



Circular line north section DF117 contract area

■ Progress of the detailed design for the main construction: 99.99%

■ Detail designer: CECI Engineering Consultants, Inc. Taiwan

■ Progress:

- The tender was announced on May 2, 2019 and was awarded on July 17; the contract was signed on July 29. Detailed design commenced on July 31, and

submission for the first review on February 25, 2020. Final phase submission for review commenced on May 25, and the tender documents were submitted on November 23. Section contract documents were approved on February 2, 2021. Section contract CF690C was awarded on December 1, 2023.

➤ Public bidding progress

✧ North section - section contract CF680A

■ Construction scope:

- This section contract includes the following three underground stations: Y19A, Y19B, and Y20, one section of a viaduct, one cut-and-cover tunnel for the daylight section, and two shield tunnel sections, which further include civil works contract CF681 and HVAC contract CF624B.

■ Public bidding progress:

- The first open public bidding was announced on February 26, 2021, began on April 13, and then was failed.
- The second open public bidding was announced on April 23, 2021, began on July 28, and then was failed.
- The third open public bidding was announced on September 13, 2021, began on October 28, and then was failed.
- The fourth open public bidding was announced on April 28, 2022, began on June 14, and then was failed.
- The fifth open public bidding was announced on January 19, 2023, began on March 2, and then was failed.
- The sixth open public bidding was announced on April 14, 2023 and began on June 1. It was awarded on June 26.

✧ North section- section contract CF680B

■ Construction scope:

- This section includes the following three underground stations: Y21, Y22, and Y23, one section of cut-and-cover tunnel for the pocket track, and three sections of shield tunnel, which further include civil works contract CF682 and HVAC contract CF624C.

■ Public bidding progress:

- The first open public bidding was announced on March 31, 2021, began on May 20, and then was failed.
- The second open public bidding was announced on June 24, 2021, began on July 29, and then was failed.
- The third open public bidding was announced on September 10, 2021, began on October 26, and then was failed.

- The fourth open public bidding was announced on April 29, 2022, began on June 15, and then was failed.
- The fifth open public bidding was announced on October 14, 2022, began on November 30, and then was failed.
- The sixth open public bidding was announced on December 2, 2022, began on December 13, and was then awarded on December 28.

❖ **North section - section contract CF680C**

■ Construction scope:

- This section contract includes the North Depot and civil works contract CF683 for depot exit/entrance lines, HVAC contract CF624D, north section escalator/elevator construction contract CF626B, and north & south section monitoring and building management system construction contract CF624G.

■ Public bidding progress:

- The first open public bidding was announced on June 29, 2021, began on August 18, and then was failed.
- The second open public bidding was announced on September 9, 2021, began on October 21, and then was failed.
- The third open public bidding was announced on October 26, 2021, began on November 24, and was awarded on December 17, 2021.

❖ **North section - section contract CF690A**

■ Construction scope:

- Original construction scope: This section contract includes the following four underground stations: Y24, Y25, Y26, and Y27, one section of cut-and-cover tunnel for the pocket track, and four sections of shield tunnel, which includes civil works contracts CF691 and CF692 and HVAC contract CF624E.
- Revised construction scope: Since the bid could not be awarded, the civil work and HVAC of station Y23 (exclusive) to Y25 (exclusive) were separated from the contract as CF690C, which then included three underground stations: Y25, Y26, and Y27, one section of cut-and-cover tunnel for the pocket track, and two sections of shield tunnel, as well as civil works contract CF692 and HVAC contract CF624E.

■ Public bidding progress:

- The first open public bidding was announced on March 15, 2021, began on May 7, and then was failed.
- The second open public bidding was announced on June 22, 2021, began on July 27, and then was failed.
- The third open public bidding was announced on September 7, 2021, began on October 22, and then was failed.

- The fourth open public bidding was announced on October 17, 2023, began on November 17, and then was failed.
- The fifth open public bidding was announced on December 29, 2023 and will begin on January 30, 2024.

✧ **North section - section contract CF690B**

■ Construction scope:

- This section contract includes the following two underground stations: Y28 and Y29, three sections of shield tunnel, and one section of cut-and-cover tunnel for the tail track, which further includes civil works contract CF694 and HVAC contract CF624F.

■ Public bidding progress:

- The first open public bidding was announced on March 15, 2021, began on April 29, and then was failed.
- The second open public bidding was announced on June 22, 2021, began on July 23, and then was failed.
- The third open public bidding was announced on September 3, 2021, began on October 13, and then was failed.
- The fourth open public bidding was announced on October 26, 2021, began on November 29, and then was failed.
- The fifth open public bidding was announced on January 25, 2022, began on March 10, and then was failed.
- The sixth open public bidding was announced on April 20, 2022, began on June 1, and then was failed.
- The seventh open public bidding was announced on December 21, 2022, began on February 1, 2023, and then was failed.
- The eighth open public bidding was announced on March 31, 2023, began on May 3, and then was failed.

✧ **North section - section contract CF690C**

■ Construction scope:

- Derived from contract CF690A, this contract includes the Y24 underground station, two shield tunnels, civil works contract CF691, and HVAC contract CF624I.

■ Public bidding progress:

- The first open public bidding was announced on April 25, 2022, began on June 9, and then was failed.
- The second open public bidding was announced on October 12, 2022, began on

November 28, and then was failed.

- The third open public bidding was announced on February 24, 2023, began on April 7, and then was failed.
- The fourth open public bidding was announced on April 13, 2023, began on July 4, and then was failed.
- The fifth open public bidding was announced on September 19, 2023, began on October 25, and then was failed.
- The sixth open public bidding was announced on November 1, 2023 and began on November 14. It was awarded on December 1.

❖ **South section - section contract CF670**

■ Construction scope:

- Original construction scope: This section contract includes the following six underground stations: Y1, Y1A, Y2A, Y3, Y4, and Y5, and six sections of shield tunnel, which further includes civil works contracts CF671, CF672, CF673, and CF671B, HVAC contract CF624A, and south section elevator/escalator works contract CF626A.
- Revised construction scope: In accordance with revisions following the announcement of the second bidding, civil works and HVAC between Station Y1 and Station Y2A (exclusive) were to be dismantled and set up as separate section contract CF670A for bidding. Following the revision, the section contract includes the following four underground stations: Y2A, Y3, Y4, and Y5, and four sections of shield tunnel, which further includes civil works contracts CF672 and CF673, HVAC contract CF624A, and south section elevator/escalator works contract CF626A.

■ Public bidding progress:

- The first open public bidding was announced on January 19, 2021, began on March 16, and then was failed.
- The second open public bidding was announced on June 29, 2021, began on August 13, and then was failed.
- The third open public bidding was announced on October 8, 2021, began on November 23, and then was failed.
- The fourth open public bidding was announced on May 31, 2023, began on July 12, and then was failed.

❖ **South section - section contract CF670A**

■ Construction scope:

- The section contract includes the following two underground stations, Station Y1 and Y1A, and two sections of shield tunnel, which further include civil works

contracts CF671 and CF671B, and HVAC contract CF624H. During the fourth bidding on November 9, 2022, CF671B was changed to an extension contract.

■ Public bidding progress:

- The first open public bidding was announced on October 8, 2021, began on November 17, and then was failed.
- The second open public bidding was announced on January 25, 2022, began on March 8, and then was failed.
- The third open public bidding was announced on April 26, 2022, began on June 10, and then was failed.
- The fourth open public bidding was announced on November 9, 2022, began on December 21, and then was failed.
- The fifth open public bidding was announced on January 18, 2023, began on February 17, and was awarded on March 15.

➤ **Construction progress**

◇ **North section**

◇ **Section contract CF680A (civil work contract CF681)**

- Starting from Station Y19 (not included), the work route runs underground along the longitudinal gradient and goes above ground at Wuquan 2 Rd. intersection, connecting the cut-and-cover tunnel at the intersection of Wuquan 3 Rd., Station Y19A on Wugong Rd., going underneath Wuquan Rd. passing through the Erchong Floodway, Station Y19B, along the south of National Highway No. 1 to the Siwei Rd. entrance, turning north to cross National Highway No. 1, and stops at Station Y20 at the intersection of Zhongshan 1 Rd. and Zhongshan 2 Rd., Luzhou. The 3.3km work involves an elevated section, a daylight section, cut-and-cover tunnels, three underground stations, and two sections of shield tunnel.
- This section consists of the following two subcontracts: civil works contract CF681 and HVAC contract CF624B. The work began on October 5, 2023, and the following tasks are now being conducted: pre-construction peripheral building status check, RIFA detection, measurement and layout, and prework briefing.



Station Y19A pre-construction peripheral building status check



Station Y19A RIFA detection



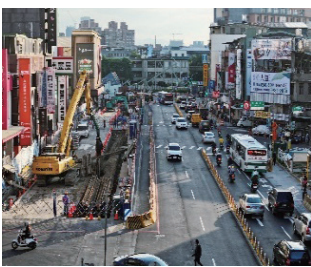
Station Y19A measurement and layout



Pework briefing

✧ Section contract CF680B (civil work contract CF682)

- The contract stretches 3.23 km, starting from Station Y20 (not included) east to Y21, connecting Station O52 of Luzhou line at Jixian Rd. and Zhongshan Rd., Station Y22 on Wuhua St. in Sanchong along Jixian Rd., Station Y23 at Wuhua Elementary School. This section includes two subcontracts, civil works of CF682 and CF624C section contract (E&M and HVAC systems construction). On April 10, 2023, the contract was enacted, and work is now being done on medial refuge islands and sidewalk removal/narrowing at the even number side of the stations along Jixian Rd. Luzhou and Sanchong, together with pipe shifting, fence work, and diaphragm wall work.



Station Y21 work on sheet piles for sewage pipe shifting work



Station Y22 fence set up for traffic routing



Station Y22 sidewalk narrowing



Station Y23 steel cage placement for diaphragm wall

✧ Section contract CF680C (civil work contract CF683)

- The work started on March 1, 2022, with four subcontracts: CF683 civil work, CF624D E&M and HVAC systems construction, CF624G all monitoring and building management system engineering of the north & south section, and CF626B north section escalator/elevator construction. Contract CF683 is expected to be completed by July 3, 2029. It covers the North Depot of the Circular line, 161kV pipe lining along the Luzhou Depot to North Depot, and the South Depot track storage area work of the Circular line. The civil work was done in North Depot in 2023 in five zones: A1, A2, B1, B2, and B3. B1 and B3 have finished diaphragm walls, center post/pile and foundation improvement, and the team is working on structure excavation and strutting. Diaphragm walls, center post/pile and foundation improvement are underway at A1, A2, and B2. For the Ximei Drain east to North Depot, gravel contact oxidation is being done; pipe lining and manhole embedding works are underway for a 161kV pipe along Luzhou Depot to North Depot.



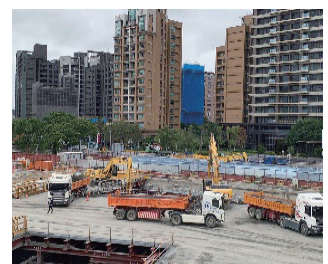
North Depot diaphragm wall work



North Depot center post work



North Depot foundation improvement work



North Depot B3 zone structure beginning of excavation

◇ South section

◇ Section contract CF670A (civil work contract CF671)

- This section contract began on June 13, 2023 and is expected to be completed by April 10, 2032, for a total construction period of 3,225 days. The work involves civil contract CF671 and HVAC contract CF624H and will complete the cut-and-covers for Station Y1 and Y1A and the tunneling work between Y1 and Y1A and between Y1A and Y2A. The progress of the work is as follows: Station Y1: (1) status check and measurement work of peripheral buildings; (2) Maokong Gondola Station to Taipei Zoo Station south sidewalk narrowing work; and (3) pipeline trial excavation. Station Y1A: (1) status check and measurement work of peripheral buildings; (2) Tree displacement work at Zhuangjing Residence, NCCU; (3) license application for student residence removal; at the first stage, the interior cleanings will apply to five buildings. and (4) pipeline trial excavation.



Construction site peripheral building status check



Station Y1 south sidewalk removal work from Maokong Gondola Station to Taipei Zoo Station



Station Y1A tree displacement work at Zhuangjing Residence, NCCU



Station Y1 pipeline trial excavation

➤ Circular line north section and south section E&M system work

◇ Contract CF620/CF627 E&M system work

- The contract was signed on September 30, 2021, and construction commenced on November 1, with a substantial construction completion date of June 30, 2030, and construction of the station expected to be completed by December 31, 2031. The contract is being reviewed, with both concept designs and detailed designs underway. The following describes the subsystems' progress.
- EMU
 - Review of EMU CDR and general documents
 - Paper review and briefing for EMU equipment vendor selection
 - Review of the progress, content, and calculations of the EMU domestic manufacturing project
 - Planning and review of EMU overseas testing and inspection timeline and locations
 - EMU appearance inspection and categorized interior design documents inspection completed

- OCS
 - OCS vendor selection review
 - CDR and DDR design documents review; platform door CDR, general documents review
 - Platform door vendor qualification review
 - Review of Circular line phase I OCS compatibility document
 - Review and briefing of platform door involvement, manpower planning, and design documents
 - Pre-work and timeline of bi-weekly "2024 test track installation at Circular line Phase I South Depot"
 - Categorized document review of the timeline, items, and locations planning for OCS overseas inspection
- Power supply system
 - Review of power system design document; work meetings
 - Review and briefing of power system vendor selection
 - Review of power system overseas inspection project
 - Power supply technician visa review
- Telecommunication system
 - Telecommunications system CDR design document review
 - Review and briefing of north & south section telecommunications system equipment supplier selection
 - Telecommunications system overseas inspections and project review
 - Review of the change of telecommunications' dot-matrix display contract
- Depot equipment
 - Review of depot equipment CDR and general documents
 - North Depot CF680C civil work, HVAC interface requirements, power contract capacity estimates review
 - 11 compatibility reviews of Phase I & II EMUs; system compatibilities of current South Depot, and future North Depot equipment.
 - Review and briefing of Depot A equipment supplier selection
 - South Depot car hauler operation and onsite inspection
 - Onsite inspection of storage area, South Depot, and North Depot.
- Auto fare collection system
 - Review of categorized management documents
 - Review of concept and detailed design documents



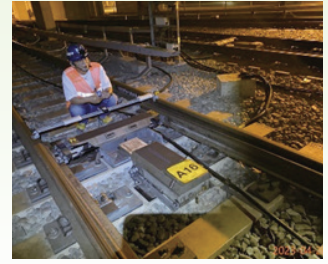
Circular line Phase I EMU compatibility inspection



South Depot equipment compatibility inspection



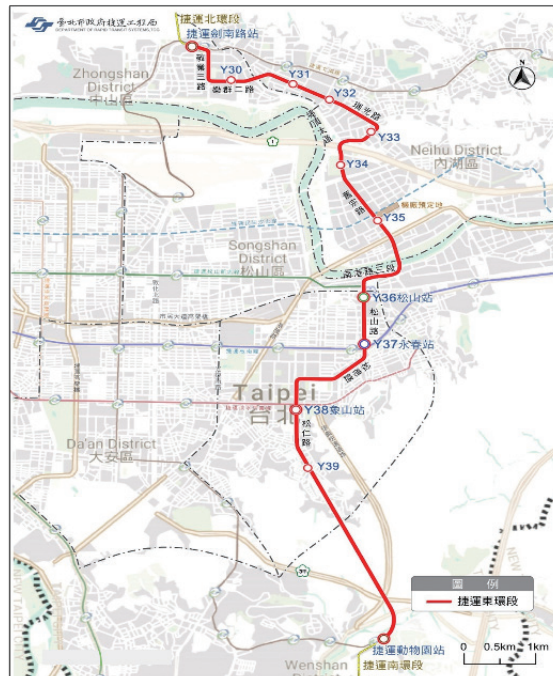
Night inspection of South Depot track area equipment



Inspection of South Depot server room track area equipment

Circular line east section

The 13.25km route involves ten underground stations and one underground depot. Starting from the tail track of Jiannan Rd. Station of the Circular line's north section, the underground passage follows Jingye 3rd Rd., Lequn 2nd Rd., Ruiguang Public Residence on Ruigunag Rd., east slope of Lane 321 Yangguang St., National Freeway 1, Jiuzong Rd., Chengmei Bridge, Nangang Rd., MRT Songshan Station of the Songshan-Xindian line (Songshan Train Station), Songshan Rd., and Yongchun Station of the Bannan line, Songde Rd., passing Xingya Junior High School and Boai Elementary School along Lane 168 Songde Rd., Songren Rd., Xiangshan Station of the Tamsui-Xinyi line, going south along the Xinyi Expressway, passing Highway No. 3 Wanfang IC, and crossing the Jingmei River to connect Y1 Taipei Zoo Station of the Circular line south section underneath Xinguang Rd.



Circular line east section route

➤ Planning of MRT stations

✧ The locations of the MRT stations are as follows:

- Station Y30: underneath Lequn 2 Rd. east to Jingye 4 Rd. intersection
- Station Y31: underneath Ruiguang Rd. in front of Zhouzi Park No. 2
- Station Y32: underneath Ruiguang Rd. in front of Dagangqian Park
- Station Y33: underneath Ruiguang Park Rd. at the intersection of Ruiguang Rd. and the entrance of Lane 321 Yangguang St.
- Station Y34: underneath Jiuzhong Rd. Sec. 2 crossing Minquan East Rd. Sec. 6
- Station Y35: underneath Jiuzhong Rd. Sec. 1 crossing Xinhu 1st Rd. (connecting to the Minsheng-Xizhi line)
- Station Y36: underneath Songshan Rd. crossing Songlong Rd. (connecting Songshan Station on the Songshan-Xindian line and Songshan train station)
- Station Y37: underneath Songshan Rd. crossing Zhongxiao East Rd. (connecting Yongchun Station on the Bannan line)
- Station Y38: underneath Songren Rd. crossing Xinyi Rd. Sec. 5 (connecting Xiangshan Station on the Tamsui-Xinyi line).
- Station Y39: underneath Songren Rd. crossing Wuxing St.

➤ Quick view of detailed design progress



Circular line east section construction area

✧ Design contract DF119

- Construction scope:
 - DF119, a 4.75km contract, involves six underground stations, an East Depot and a BSS. It begins at Station Y29 tail track (not included) of the Circular line's north section and moves forward along Jingye 3 Rd., Lequn 2 Rd. Station Y30 will be located near Marriot Hotel and Binjinag Junior High School ; moving along Lequn 2 Rd. across Taipower Neihu Office and Zhouzi Park No. 1, Ruiguang Rd., Station Y31

near Zhouzi Park No. 2; to Ruiguang Rd. with Station Y32 at Dagangqian Park; along Ruiguang Rd., Station Y33 inside Ruiguang Park; from here the up/down track tunnels advance to Jiuzhong Rd. Sec. 2 from Lane 171 Jiuzhong Rd. Sec. 2 and Lane 178 Ruihu St., respectively; passing National freeway 1, Station Y34 next to Lane 11 of Miquan East Rd. Sec. 6, across Miquan Bridge; Station Y35 and East Depot of the Circular line along Jiuzhong Rd. Sec. 1 and Xinhu 1 Rd. entrance. Cut-and-cover methods are applied to the underground stations, crossovers, pocket tracks and East Depot, with the remainder shield tunneling approach.



Circular line east section contract DF119 construction area

- Progress of the detailed design for the main construction: 37.7%
- Detail designer: Joint tender by CECI Engineering Consultants, Inc., Taiwan and T.Y. Lin Taiwan Consulting Engineers, Inc.
- Progress:
 - The open tender was announced on March 15, 2023 and was awarded on May 30. Detailed design began on May 31. Documents were submitted for first review on August 28, and the final phase of Construction Contract A was submitted for review on December 26.

◇ Design Contract DQ120

- Construction scope:
 - This contract involves the south end of Station Y35 (not included) and moves along Jiuzhong Rd. Sec. 1 under the shield tunnel, across Huandong Blvd., Chengmei Bridge downstream, and Yucheng Pumping Station, following to Nangang Rd. Sec. 3 and Bade Rd. Sec. 4, and Songshan Rd., with Y36 station under Songshan train station and MRT Songshan Station. Moving along Songshan Rd., Station Y37 will be located near Zhongxiao East Rd. intersection; then to Songde Rd. and onto Lane 168 Songde Rd. and Lane 95 Songren Rd., passing Xinyi Rd. Sec. 5, with Station Y38 set at the intersection; following Songren Rd., Station Y39 will be set near Wuxing St. intersection, continuing past Mt. Muzhi, National Highway No. 3, the Jingmei River, Xinguang Rd. Sec. 2, connecting Y1 Taipei Zoo Station of the south

section. The 8.42km route will have four underground stations. The cut-and-cover method applies to underground stations, pocket tracks, and ventilation shafts. The remaining tunnel sections will be bored using shield machine or other methods.



Circular line east section contract DF120 construction area

- Progress of the detailed design for the main construction: 45%
- Detail designer: Sinotech Engineering Consultants
- Progress:
 - The open tender was announced on March 9, 2023 and was awarded on May 23. Detailed design (NTP) commenced on May 24. Documents were submitted for first review on August 21, and the final phase of Construction Contract C was submitted for review on December 15.



Innovative Measures and Improvements

Precise sliding of the shield machine and workflow innovation to ensure safer, more time-efficient results

➤ Origin

Wanda line Phase I extends 9.5 km from Chiang Kai-Shek Memorial Hall Station to Jincheng Depot in Tucheng, passing through Wanhua, Yonghe, and Zhonghe. To date, the scale of this project has been the largest of its kind in Taipei and New Taipei. Furthermore, section contract CQ860 in Tucheng and Zhonghe included Stations LG07 and LG08 along with six shield tunnels, making it the construction project with the longest distance and the highest contract price. Because it connects directly to Jincheng Depot, the route will be critical for EMU testing, which will be used to determine when the Wanda line will be opened to the public.

Since MRT construction takes place in heavy traffic zones, to ensure minimal impacts and the relocation of pipelines, the routes between stations are completed using shield tunnels, with the exception of cut-and-cover underground stations, which require fenced work sites on the ground level. The speed of shield tunnel construction is crucial to the opening of an MRT route to the public, as track work can only begin after the tunnels have been completed, followed by power supply and signal work, and then finally, EMU testing. The progress can impact the construction timeline and completion date, not to mention hundreds of millions of dollars in penalties related to requests to postpone E&M equipment arrival dates.

The lengths of most of the tunnels on the Wanda line are under several hundred meters. Due to cost considerations related to the shield machines (NT\$200M per set) for each civil contract, two shield machines were used to bore the tunnels in alternating shifts. After each tunnel was completed, the machine would be disassembled and lifted to the ground through a shaft from worksites 20 meters underground. The pieces, which weighed dozens of tons, were then transported to the next site for re-assembly before the machine could be operated again. Not only were the disassemblies and re-assemblies time consuming, but they also required cranes and flatbed trucks; furthermore, this approach entailed disrupting traffic during the construction process.

Due to the massiveness and complexity of the machines, it took up to six months to disassemble and assemble a shield machine. This was particularly the case during the pandemic, when manpower and materials were limited, and it was not possible for visas to be approved for foreign technicians to work in Taiwan. Under such circumstances, even though the disassembly was guided through online conferences, the process was time consuming, and the workers faced significant risks. A fatal accident had previously occurred at another contract site that involved a worker being crushed by a dismantled machine body. This contract involved six tunnels and required an innovative approach to

replace conventional work methods; only then could the teams work in a safer manner within the shortest period of time.

To shorten work periods and avoid risks during disassembly, DORTS proposed the “Sliding Method” to replace the original disassembly process. This method enabled the team to save time, impact traffic less, improve road user safety, and reduce risks from lifting components.

➤ **Methods**

I. Analysis of issues and countermeasures

Regarding the aforementioned issues, the issues encountered and the strategies utilized to resolve them are described below. The goal was to address the (dis)assembly procedure, shorten work times, and minimize work injuries, all while maintaining top quality standards.

Issue	Solution
<ol style="list-style-type: none"> 1.Minimize shield tunnel work times by shortening the shield machine (dis)assembly time. 2.The main part of the machine can weigh more than 30 tons; dismantling work required great teamwork and exposed the team to great risk. 3.The process took up to six months, and the cranes and flatbed trucks occupied considerable space and disrupted traffic flow. 4.The machines were mostly made in Japan or China. During the three years of the pandemic, foreign technicians were not permitted to come to Taiwan to instruct the team, which affected (dis)assembly quality and efficiency. 	<ol style="list-style-type: none"> 1.The non-disassembly method was made possible through accurate knowledge of the dimensions of the station structure. The machines were moved underground, which both saved manpower and improved the safety issues related to (dis)assembly. 2.Since the width of the roads around the work site did not allow for the passing of the machine and its accessories, tracks were installed at the station to enable the machine to slide to the next tunneling position. This approach eliminated disassembly and lifting work, while also conserving space that could be used to move the machine on the ground level. This way, the construction work would not be delayed even if foreign technicians were not available on site for (dis)assembly instruction.

DORTS also adopted the SWOT method to maximize advantages, reduce the impact of shortcomings, realize the potential of every opportunity available, and eliminate potential threats. After the analysis of potential directions, the team determined their SO (strength and opportunity) strategies. DORTS’ construction experiences with the Japanese shield machine provider allowed for the management of risks related to construction progress, traffic impacts, and work injuries. From here, DORTS proposed the idea of sliding the machine across the station to replace the original practice. The new approach greatly reduced both work times and impacts on ground traffic during the working period, and it was also safer for road users. Without having to lift the machine to the ground level, the team were able to minimize risks and achieve mutual wins for the public, the government, and the vendors.

<p>Opportunity (O)</p> <ul style="list-style-type: none"> • Progress ahead of schedule with a reduced work duration • Zero work injuries • Effective cost control and fund utilization 	<p>Threat (T)</p> <ul style="list-style-type: none"> • Affected by the pandemic, manpower was reduced, and foreign technicians were not able to be present for (dis)assembly • The entrances had to be set at congested roads. • Construction progress was pressing. • The cutting and assembly process of shield machine could easily cause work injuries.
<p>Strength (S)</p> <ul style="list-style-type: none"> • The expertise and abundant past experiences of the shield machine vendor • The serious and discreet work attitude of the Japanese team • The Japanese made shield machines were comparably lighter • DORTS had abundant experiences regarding MRT construction work, management, and supervision 	<p>Weakness (W)</p> <ul style="list-style-type: none"> • Less precision requirement for civil construction; higher requirement for the precision of the sliding process. The support system of the existing station limited the clear area and required assessment. • The method was new and there was no experienced engineer.

II. Motives and improvement study

The scope of the proposal involved subcontract CQ863 of section contract CQ860, which consisted of a 147.4-meter-long, 22.75-meter-wide, and 21-meter-deep island platform station with two levels underground. In order to minimize the risk of lifted machine parts falling, injuries caused by lifting work, traffic control and the impact of large crane operations, work time period, and peak traffic hours, as well as to maximize the accessibility of sidewalks, following the completion of the station structure base plate, DORTS assessed the feasibility of sliding the shield machine through Station LG08 (Zhonghe Senior High School) to the next tunneling position. Based on the overall assessment, the proposed method was noteworthy for its ability to save 65 work days, thus effectively shortening the construction time period.

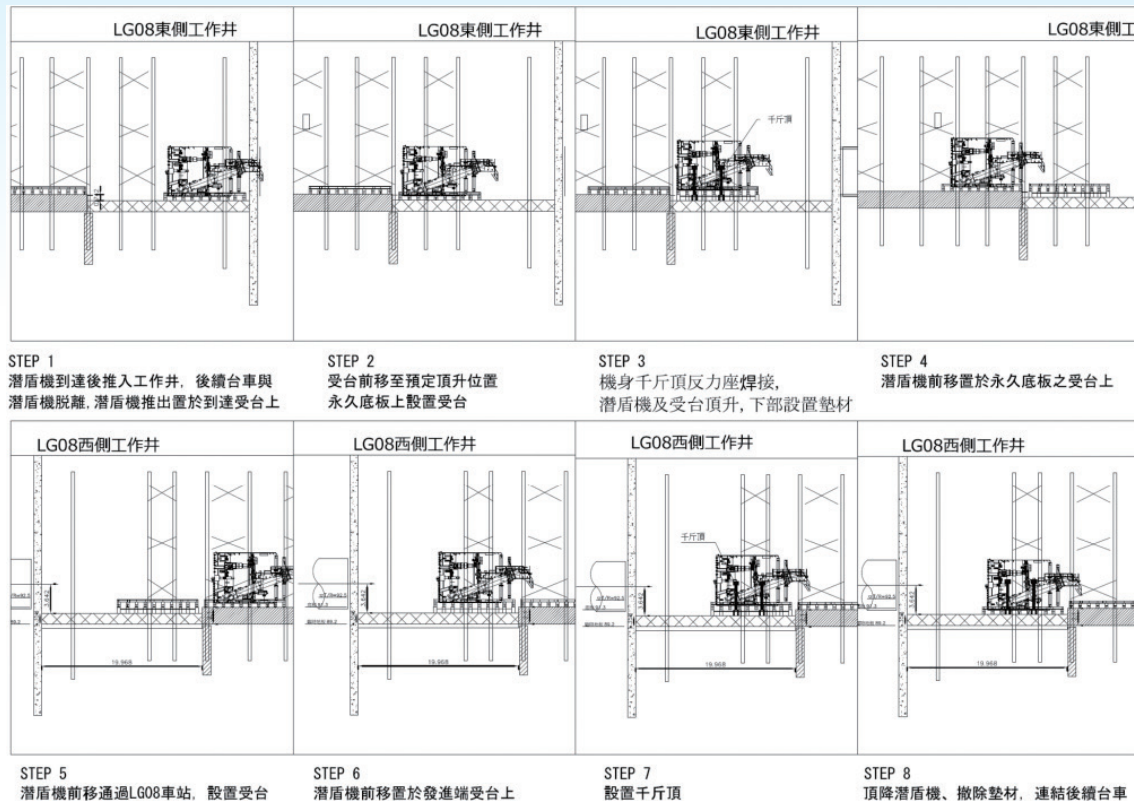


Figure 1. The planned sliding work flow

III. The practice of sliding a shield machine

(I) Stage I – Push forward and lift the 300-ton machine

At the end of the tunnel, the machine was pushed through the existing work shaft and out onto the saddle, which then carried the machine to the location where it was to be jacked up. The machine was lifted using six 150-ton hydraulic cylinders together with supporting materials. When it reached the necessary height, the machine was pulled from the saddle onto the sliding surface. Throughout the process, the greatest challenge was controlling the stroke length and power in order to ensure that all cylinders maintained the same height at all times. This was important in order to keep the load in a perfectly horizontal position. Failing to do so would result in the machine falling off and significant consequences.

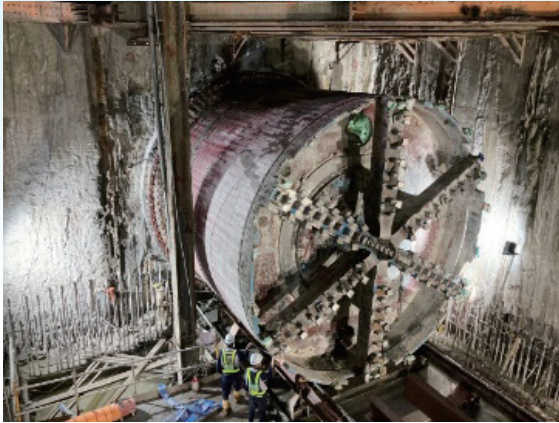


Figure 2. Moving the machine forward



Figure 3. Lifting the machine

(II) Stage II – Two 100-ton hydraulic jacks were used to move the machine

Two 100-ton hydraulic cylinders were employed simultaneously to push the machine forward. Every 10 meters, the team stopped to reposition the saddle and tracks ahead of the machine. The team alternated between pushing and repositioning until the trolley reached the end of the track.

(III) Stage III – Six 100-ton hydraulic cylinders were utilized to facilitate the machine's descent

The machine was slid onto the departure saddle. Here, jacks were used to lower the machine to the saddle height and prepare the machine for the next batch of tunneling work.



Figure 4. Sliding the machine



Figure 5. Lowering the machine

➤ Innovation highlights

I. Precision was key. Clearing the route for relocation was a necessity.

Passing through the underground station which was still under construction meant encountering central posts and side supports, and the narrowest horizontal space was only 6.8 m from the diaphragm wall to a central post and 7.4 m vertically from the fourth support to the structure base plate (the outer diameter of the machine was 6.24 m). Together with the loading saddle, this left only 1 cm of space between the load and the block. Therefore, movement required high precision; otherwise, the machine was in danger of running into walls, derailing, and causing significant damage.

The construction team gathered literature and cases from overseas and sought out technical support from a shield machine provider in Japan. Based on information about other domestic projects in Japan, the team concluded that the key to success was controlling the precision of the route in a fully straight direction. This required repetitive measurements and inspections, and the passing route had to be measured to ensure the precise level and height before the U-shape tracks were installed in order to eliminate the blocks, the central posts, and the diaphragm walls which were set up during excavation.

II. The route and weight support were precisely measured and enhanced as suggested by an experienced construction team to stabilize the machine movement

To ensure smooth implementation, even though the construction plan showed that the station base plate would allow for the passing of the machine, the DORTS team members and technician supervisors pointed out that, based on their local experiences, the load-bearing capacity of the ventilation pipes and the gaps between ground beams should be re-examined. After inspection by contracted construction technicians, temporary H-shaped steel beams were added at highlighted spots in order to enhance support.

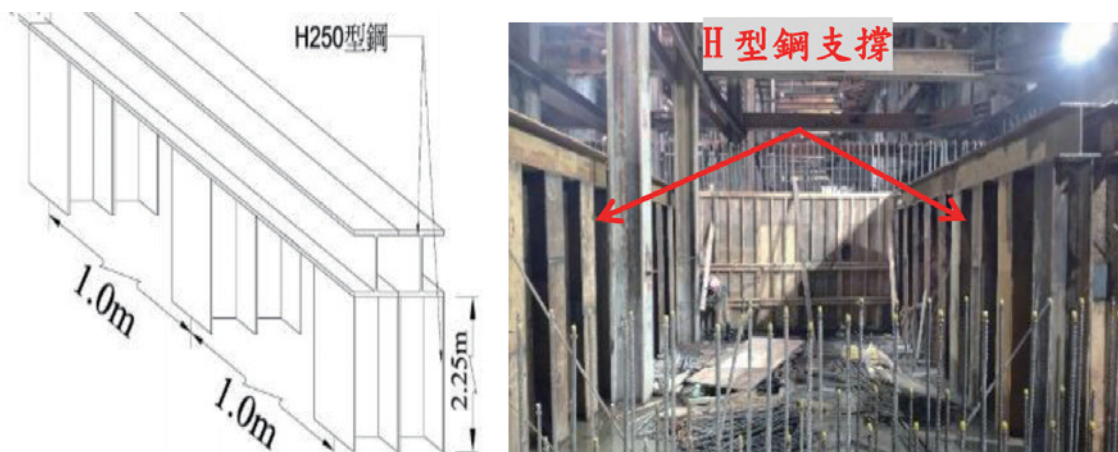


Figure 6. Temporary H-shaped steel support

➤ Cost analysis

The study gathered DORTS, the design team, the main vendors, and the contractors together for 1,000 hours over six months. The targets and measures were discussed and adjusted repeatedly prior to the final version. During this procedure, only large jacks were employed to slide the machine along the track, in comparison to the previous method, which involved dismantling work, lifting machinery, and significant manpower. As a result, this novel approach effectively shortened the work period.

➤ Results

I Internal benefits

(I) Reduction of work by 65 days

The sliding work continued around the clock. The team worked in two shifts to move the machine and trolley simultaneously and completed the procedure 65 days ahead of schedule, thus significantly shortening the waiting time between boring works. The project took only nine days, from April 21, 2022 to April 29 of the same year, to move the machine to the next work shaft.

(II) Lives matter. Zero work injuries occurred during the moving of the machine.

In view of the past fatal accident related to the disassembly of the machine, this method eliminates such risk and thus contributes to an accident-free work place.

(III) A total of NT\$4 million and 7,800 work hours were saved

This method and procedure saved around NT\$4 million in direct manpower costs and 7,800 work hours required to weld and lift the machine pieces, so that the team could use its time more efficiently and flexibly. This factor further helped to address the material and manpower shortages during the pandemic.

II External benefits

(I) Undisrupted traffic, bus services, and city life around the project sites

1. This method allowed for undisrupted public transportation around the work sites (on Liancheng Rd.) The intersection remained cleared, and vehicles continued to move at speeds of 30 km/hour and above. The total SD time (second/passenger car equivalent time) saved road users 2,000 minutes of time per day.

2. The buses around the work sites continued normal operations, running at 5–10-minute intervals during peak hours and ensuring that local riders' needs were met.

(II) Practices were recorded and shared with the public

The entire project was recorded and shared on YouTube, showcasing the successful practice, planning, and contributions related to shield tunnel construction.

(III) The innovation freed up space and was applied at another work site.

This effective practice was replicated in contract CF680B of the North Section, which was awarded at the end of 2022. The construction team planned to skip disassembly with this method, avoiding noise and reducing the space required to be set aside for the large machinery for an extended period.

(IV) The methods applied in this contract were acknowledged by both scholars and business practitioners, with hundreds of site visits between 2016 and 2022.

➤ Conclusion

I A record-breaking achievement despite challenges

Even though this was not the first application of the technique, successfully shifting the machine from one end to the other across a total of 300 meters was a national first. The record was a proud achievement in overcoming obstacles encountered by the team through a proactive mindset and use of SWOT analysis.

II Good neighbor practice

The improvement not only limited disruption to the public, but also to the traffic around construction sites, while improving the work quality itself. The safety, efficiency, and quality of the construction were all significantly improved through this new practice.



Planning a Comprehensive MRT Network

Studies of areas where MRT services are unavailable are continually conducted for Taipei City Metropolitan Area MRT transit network planning to extend existing routes to far-reaching areas in order to construct a more complete MRT network service. Plans for 2023 include the Circular line east section, the Minsheng-Xizhi line and the Shezi, Shilin, and Beitou light rail transit network.

Future Network Planning

➤ Circular Line East Section

Comprehensive Planning:

- ✧ The comprehensive planning report was approved by the Executive Yuan on March 29, 2023, and the construction stage commenced.

➤ Minsheng-Xizhi Line

Comprehensive Planning:

- ✧ Xidong line project (Donghu-Xizhi District Office), which was handled by the New Taipei City Government, was approved by the Executive Yuan on January 13, 2023. New Taipei City DORTS cooperated on the section of the Minsheng-Xizhi line in Taipei City to start an assessment plan under the same plan/entire line project evaluation in May and incorporate it into the original Xidong line contract for feasibility revision and comprehensive planning. It is expected to be submitted in the first quarter of 2024 to the MOTC for review, and approval by the central government is anticipated within two years.

➤ Shezi, Shilin, and Beitou Light Rail Transit Network

Feasibility Study (pending review to be recommenced):

- ✧ The Shezi Island Flood Prevention Project was approved by the Executive Yuan on December 12, 2019.
- ✧ The Urban Planning Detailed Plan of the Shezi Island Development Project was approved by the Taipei City Urban Planning Commission on April 23, 2020.
- ✧ The Environmental Impact Assessment of the Shezi Island Development Project was approved by the Taipei City Environmental Impact Assessment Committee on January 19, 2022.
- ✧ It was recommended that the implementation of the Shezi Light Rail Plan be conducted following the approval of the zone expropriation plan by the Ministry of the Interior and that the Shezi Light Rail Transit of the Shezi Island Development Project be adopted in accordance with Taipei City Government's specific time schedule.

規劃中路網



- 民生汐止線
- 社子/士林/北投區域輕軌路網



Retrospect and Prospects

Taipei Rapid Transit System has been established for over thirty years and has amassed a great deal of professional talent in the domains of domestic and foreign planning, design, construction, and operations and has invested it into the ranks of MRT construction. Under the leadership of the mayors who have served in office during this time and the assistance of other related units, the construction of 152.3 km of the MRT network has been completed as of the end of 2023. The Taipei MRT system has been highly acclaimed by the domestic and international community; hence, there has been public demand calling for MRT services to be extended further to other living areas. Considering the overall requirements and the trend of gradual growth of the Taipei Metropolitan Area, there is still room for continual growth and additional diligent efforts to expand the scope of MRT operations. In accordance with the public's expectations and the requirements of the mayor and commissioner, DORTS will fully dedicate themselves to further increasing efforts to develop objectives and strategies for future works with the aim of fulfilling DORTS' vision of "Excellent Construction, an efficient MRT, and Easy Travel in Taipei."

Looking to the future, Taipei City Government is devoted to actively promoting the development of the Circular line (Circular line Phase I, Circular line north & south section, and Circular line east section connected in a series to form a Circular line that facilitates taking just one train to arrive at destinations). This line adopts a streamlined system design and a concept of maintenance through resource sharing (depots included) in consideration of limited land resources and sustainable operations. Upon completion, this route will traverse 14 districts across Taipei City and New Taipei City and connect emerging major development projects along the route. In addition, the line will connect with 16 radiating tracks in Taipei Metropolitan Area, including Taiwan High-Speed Rail (THSR), Taiwan Railways Administration (TRA), the Taipei MRT, and light-rail lines. The completed Circular line will enable passengers to travel around the periphery of the Taipei Metropolitan Area without entering the downtown area for transfer, which will be a significant time-saver for travellers. Convenient transportation services will be achieved through seamless transfers between various integrated transport modes, effectively improving the accessibility and mobility of public transportation. A substantial reduction in travel time between districts will promote balanced and sustainable development of regional industries and the environment.

DORTS will maintain a steady pace in constructing new MRT routes, including Wanda line Phase I and Phase II construction, Circular line north & south section, Circular line east section (approved by the Executive Yuan on March 29), and Xinyi eastern extension, totalling a route length of 58.15 km. Routes currently undergoing planning include Minsheng-Xizhi line and Shezi, Shilin, and Beitou light rail network. Among these routes, New Taipei City DORTS cooperated on the section of the Minsheng-Xizhi line in Taipei

City to begin an assessment plan under the same plan/entire line project evaluation in May and incorporate it into the original Xidong line contract for feasibility revision and comprehensive planning. The overall length of the MRT route network in the Taipei Metropolitan Area will reach more than 277 km (including the routes for which New Taipei City is responsible). It is believed that following the completion of the Taipei Metropolitan MRT route network, it will be possible to reduce the relative number of private vehicles and alleviate traffic congestion in the Greater Taipei Metropolitan Area.

When the initial Taipei MRT network was planned, given the regulations at that time in design and land use conditions, some of the stations were built with a single stairwell alongside one escalator operating in the ascending direction or with a single stairwell without an accompanying escalator. Although this design suffices for the need to evacuate passengers from stations, it is still considered to be lacking in consideration of the needs of the elderly.

As Taiwan has become an ageing society, the fact that elderly passengers need elevators/escalators has also become a matter of pressing concern. Thus, DORTS has actively put forth improvement plans to install elevators/escalators at stations. As a part of the initial improvement plan (from 2015 to 2019), DORTS installed ten escalators and three elevators at four stations, including Guting Station and Hongshulin Station. DORTS subsequently moved on to the mid-term improvement plan (from 2020 to 2022) to install 60 escalators and one elevator at 16 stations on the Bannan line and Tamsui-Xinyi line, and as of the end of August 2022, they had been completed. Xinlu line stations and Ximen Metro Mall improvement plan, in which eight escalators and three elevators at six stations will be installed, was contracted in 2022. As of the end of 2023, two escalators have been completed, and the rest are expected to be completed by the end of 2024. It is anticipated that following the completion of the improvement plans, the elderly will be able to enjoy a friendly and convenient passenger experience while riding on the Taipei MRT.



2023 Major Events

01

January 4

Section contract CR381A high-capacity EMU procurement project commenced (SEMPO)



02

February 2

Construction for Circular line Phase I section contract CF660B was accepted (1st DPO)



02

February 9

Construction for Circular line Phase I section contract CF660A was accepted (1st DPO)



02

February 17

Taipei City Government Construction Inspection Unit conducted an on-site inspection of Wanda line Phase I section contract CQ860 (1st DPO)



03

March 6

Mayor Chiang Wan-an presides over the tunnel breakthrough ceremony of Wanda line Phase I (2nd DPO)



03

March 18

Groundbreaking ceremony for Circular line north section contract CF680B (1st DPO)



03

March 21

The Public Construction Commission, Executive Yuan inspected "Taipei Metropolitan Area MRT Wanda-Zhonghe-Shulin line Planning Report and Adjacent Land Development Plan" and "Taipei Port Containment Public Works Remaining Earthworks Operations." (1st DPO)



03

March 23

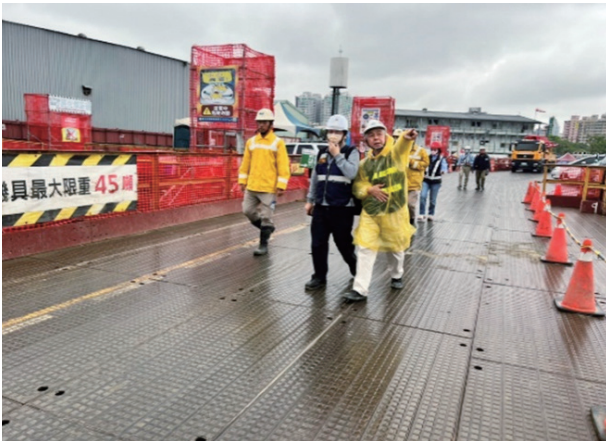
New Taipei City Labor Standards Inspection Office inspected the civil construction of Wanda line Phase I section contract CQ861 Station LG06 (1st DPO)



03

March 29

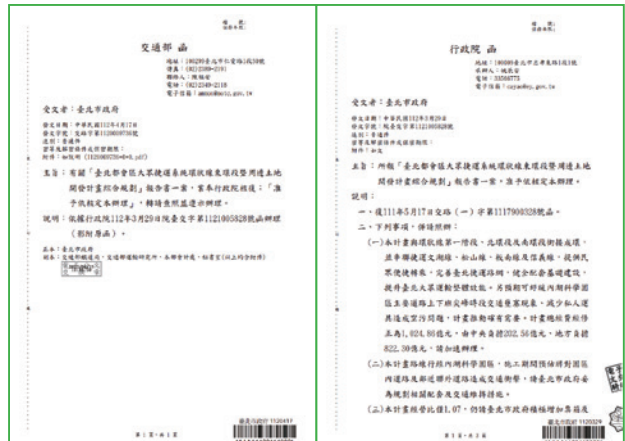
New Taipei City Labor Standards Inspection Office inspected the construction of Wanda line Phase I section contract CQ870 (1st DPO)



03

March 29

Circular line east section comprehensive planning report was approved by the Executive Yuan (Comprehensive Planning Division)



03

March 30

Finance Committee of the Legislative Yuan inspected the development plan for the surrounding areas of Xinyi eastern extension (2nd DPO)



04

April 7

Taipei City Government Department of Cultural Affairs Commissioner Tsai Shih-ping inspected the restoration project for the historical site, Taipei Factory (2nd DPO)



04

April 10

Mayor Chiang Wan-an inspected Xinyi eastern extension section contract CR580C construction (2nd DPO)



04

April 11

Contract IZ0005 planting transplantation project for Taipei City Haoran Senior Citizens Home reconstruction was accepted (1st DPO)



04

April 12

Taipei City Government Construction Inspection Unit inspected Wanda line Phase I section contract CQ870 (1st DPO)



04

April 18

Chief Wen Liu-jing from 1st DPO was the recipient of the 2022 Role Model of Anti-corruption (1st DPO)



04

April 19

The application to commence construction was submitted to the construction management authority for C1/D1 Land Development Project (1st DPO)



05

May 16

Members of the Control Yuan inspected the restoration project for the historical site, Taipei Factory. The inspection was accompanied by Taipei City Government Deputy Mayor Lin Yi-hua, Department of Cultural Affairs Commissioner Tsai Shih-ping, and DORTS Commissioner Cheng De-fa. (2nd DPO)



05

May 8

Initial network exit/entrance elevator and escalator mid-term improvement contract IYZX02 was completed and accepted. (1st DPO)



05

May 18

Tamsui-Xinyi line Qiyuan Station exit/entrance turnkey addition construction contract CT207E was accepted (1st DPO)



05

May 31

Detailed design for Circular line east section design contract DF119 commenced
(Civil Engineering and Architectural Design Division)



06

June 2

Wanda line Phase I section contract CQ860 was the recipient of the 2023 China Taipei Tunneling Association Tunneling Award of Excellence (1st DPO)



06

June 9

The signing of land development investment contract for "Wanda line Phase I Jincheng Depot and Juguang Station/ Kalah Station (M9) Land Development Project" with investor Huang Hsiang Construction Corporation was completed
(Joint Development Division)



06

June 13

Taipei City Government Construction Inspection Unit inspected Wanda line Phase I contract CQ861 construction (1st DPO)



06

June 13

Circular line south section contract CF670A groundbreaking ceremony (2nd DPO)



06

June 14

New Taipei City Government Construction Inspection Unit inspected Wanda line Phase I section contract CQ870 (1st DPO)



06

June 29

Research, Development and Evaluation Commission, Taipei City Government conducted Wanda line Phase I mid-term verification (1st DPO)



07

July 16

Taipei Public Library Kangning Branch Joint Office Building construction contract IZ0008 ground breaking ceremony (1st DPO)



07

July 25

Circular line north section contract CF680A was signed (1st DPO)



07

July 31

DORTS was ranked 3rd (1st in C-level public agencies) in the 2023 Taipei City Government Cyber Security Audit (Information and Technology Development Division)



08

August 16

Taipei City Government Department of Cultural Affairs Commissioner Tsai Shih-ping and Research, Development and Evaluation Commission Chairperson Yu Chen-hua together with Department of Legal Affairs, Department of Urban Development, and the Department of Finance inspected the restoration project for the historical site, Taipei Factory (2nd DPO)



08

August 18

Wanda line Phase I section contract CQ860 was the recipient of the Taipei City Distinguished Public Construction Award – First Prize in the Civil Engineering Category (1st DPO)



08

August 18

Executive Yuan Premier Chen Chien-jen inspected the Taipei City section of Wanda line Phase I construction (2nd DPO)



08

August 21

The Public Construction Commission, Executive Yuan inspected Xinyi eastern extension section contract CR580C (2nd DPO)



08

August 30

Investor solicitation was announced for Wanda line Phase I Chiang Kai-shek Memorial Hall Station (M4) land development project (Joint Development Division)



09

September 4

Taipei City Council member Wu Pei-yi and Department of Cultural Affairs Commissioner Tsai Shih-ping inspected the restoration project for the historical site, Taipei Factory (2nd DPO)



09

September 6

Wanda line Phase I contract CQ861 was the recipient of the New Taipei City Government 12th Construction Safety Award (1st DPO)



09

September 6

Wanda line Phase I section contract CQ860 was the recipient of the New Taipei City Government 12th Construction Safety Award (1st DPO)



09

September 27

DORTS underwent two audits (document review, on-site audit) by a third party organization (TÜV Rheinland Taiwan) and obtained a CNS/ISO 27001:2022 International Validation Certificate (Information and Technology Development Division)



10

October 5

Circular line north section contract CF680A construction commenced (1st DPO)



10

October 15

Circular line north section contract CF680A groundbreaking ceremony (1st DPO)



10

October 18

Shield tunnel breakthrough ceremony of Wanda line Phase I section contract CQ860 (1st DPO)



10

October 24

Wanda line Phase I section contract CQ860 was the recipient of the 2023 Taipei City Government Creative Proposal Competition Innovation Award (1st DPO)



10

October 27

Water Resources Department, New Taipei City Government commissioned the Taiwan Association of Hydraulic Engineers to conduct a flood prevention inspection at Wanda line Phase I section contract CQ870 (1st DPO)



11

November 14

C1/D1 Land Development Project Column Erection Ceremony (1st DPO)



11

November 23

New Taipei City Labor Standards Inspection Office conducted joint audit operations at Wanda line Phase I contract CQ861 (1st DPO)



11

November 23

New Taipei City Deputy Mayor Chen Chwen-jing inspected Wanda line Phase II section contract CQ890 (2nd DPO)



12

December 6

"IZ0001 Taipei Fine Arts Museum Collection Warehouse New Construction & South Entrance Improvement Project" was completed (1st DPO)



12

December 26

Wanda line Phase I section contract CQ860 was the recipient of the 23rd Public Construction Golden Quality Award – Civil Engineering Category (1st DPO)



12

December 27

Circular line east section briefing session for civil engineering companies (Civil Engineering and Architectural Design Division)



2023 Awards

No.	Issuing Authority	Award Date	Award Name	Notes
1	Taiwan Geotechnical Society	April 8	Wanda line Phase I section contract CQ850 is the winner of the Excellent GeoEngineering Award	2 nd DPO
2	Chinese Taipei Tunnelling Association	June 2	Wanda line Phase I section contract CQ860 is the winner of the Outstanding Tunnel Construction Award	1 st DPO
3	Chinese Taipei Tunnelling Association	June 2	Wanda line Phase I section contract CQ850A is the winner of the Outstanding Tunnel Construction Award	2 nd DPO
4	The Real Estate Association of R.O.C.	July 27	Wanda line Phase I section contract CQ850A is the winner of the Taiwan Real Estate Excellence Award – Planning and Design Category – Gold Medal	2 nd DPO
5	The Real Estate Association of R.O.C.	July 27	Xinzhuang line Sanchong Station (M6) joint development project is the winner of the Taiwan Real Estate Excellence Award – Planning and Design Category – Gold Medal	Joint Development Division
6	Health Promotion Administration, Ministry of Health and Welfare	August 17	Wanda line Phase I section contract CQ870 is the winner of the 2023 Cancer Prevention and Healthy Worksite Award	1 st DPO
7	Taipei City Government	August 18	Wanda line Phase I section contract CQ860 is the winner of the 2023 Taipei City Distinguished Public Construction Award – Civil Engineering Category	1 st DPO
8	Taipei City Government	August 18	Wanda line Phase I section contract CQ850A is the winner of the 2023 Taipei City Distinguished Public Construction Award – Civil Engineering Category	2 nd DPO
9	Taipei City Government	August 25	“The introduction of noise-reducing wheels for Taipei MRT medium-capacity EMU” is on the shortlist for the Taipei City Government Creative Proposal Competition Innovation Award	SEMPO
10	New Taipei City Government	August 30	Xinzhuang line Sanchong Station (M6) joint development projects is the winner of the 2023 New Taipei City Outstanding Construction Award	Joint Development Division
11	New Taipei City Government	September 6	Wanda line Phase I section contract CQ861 is the winner of the 12th New Taipei City Construction Safety Award – Outstanding Public Works Award	1 st DPO
12	New Taipei City Government	September 6	Wanda line Phase I section contract CQ860 is the winner of the 12th New Taipei City Construction Safety Award – Outstanding Public Works Award	1 st DPO

No.	Issuing Authority	Award Date	Award Name	Notes
13	New Taipei City Government	September 6	Wanda line Phase I section contract CQ870 is the winner of distinctive group A construction unit in the 12th Construction Safety Awards by the New Taipei City Government	1 st DPO
14	New Taipei City Government	September 6	Wanda line Phase I section contract CQ870 is the winner of the 12th New Taipei City Construction Safety Award –Health and Safety Award	1 st DPO
15	Chinese Cultural and Creative Development Association	September 20	Wanda line Phase I section contract CQ842C is the winner of the 31 st Chinese Architectural Golden Stone Award – Quality Public Construction/ Outstanding Space Activation Category– Construction Group Golden Stone Award	2 nd DPO
16	Chinese Cultural and Creative Development Association	September 20	“Urban renewal project of eight plots at No. 580, Subsection 4, Zhongshan Section, Zhongshan District, Taipei City” is the winner of the 31 st Chinese Architectural Golden Stone Award – Quality Public Construction Category – Planning Group Golden Stone Award	Joint Development Division
17	Taiwan Sustainability Promotion Association	October 18	Wanda line section contract CQ850A is the winner of the 24rd National Architecture Golden Award – Public Construction Quality Award	2 nd DPO
18	Taiwan Sustainability Promotion Association	October 19	“Urban renewal project of eight plots at No. 580, Subsection 4, Zhongshan Section, Zhongshan District, Taipei City” is the winner of the 24rd National Architecture Golden Award – Public Construction Quality Award	Joint Development Division
19	Taipei City Government	October 24	Wanda line Phase I section contract CQ860 is the winner of the Taipei City Government Creative Proposal Competition Innovation Award	1 st DPO
20	Taipei City Government	October 24	“Breaking the Shackles, Re-innovation – Wanda Line Phase I Station Structure Construction” is the winner of the Taipei City Government Creative Proposal Competition Innovation Award	2 nd DPO
21	Chinese Institute of Civil and Hydraulic Engineering	December 1	“Circular line south section design contract DF115 detailed design results” is the winner of the 2023 Engineering Digital Innovation Application Award	Civil Engineering and Architectural Design Division
22	Chinese Institute of Civil and Hydraulic Engineering	December 1	“Circular line east section design contract DF118 design results using digital innovation technologies such as BIM and design automation” is the winner of the 2023 Engineering Digital Innovation Application Award	Civil Engineering and Architectural Design Division
23	Public Construction Commission	December 26	Wanda line Phase I section contract CQ860 is the winner of the 23rd Public Construction Golden Quality Award – Civil Engineering Category	1 st DPO





Taipei Factory



臺北市政府捷運工程局

Department of Rapid Transit Systems, Taipei City Government

臺北市中山北路二段48巷7號

No. 7, Lane 48, Sec. 2, Zhongshan N. Rd., Taipei City 10448, Taiwan (R.O.C.)

TEL: 886-2-25215550 <http://www.dorts.gov.taipei>