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Taiwan Railways Annual Report 2017







2017 was the 130th anniversary of TRA. We celebrated it by holding a series of activities to sharing this joy with everybody.

From objective with of all perspectives, TRA is both traditional and modern, with long history and is the only island—wide railway. Being an important link of public transportation, TRA persisting the core value of "safety, punctuality, service and innovation", undertakes the mission of providing complete public transporation services. This is a responsibility of our commitment and more of an outstanding mission.

TRA has fully potential to stabilize operational efficiency and quality, sustainably promote "Train Operation Safety Improvement 6-Year Plan", manage grade-separated railroad crossing, dangerous sections and bridges remodeling and reinforcing, stair free railway carriage, shape a safe and reliable operation quality. Meanwhile, to cooperate with "Forward-looking Infrastructure Development Program - Railway Construction of Executive Yuan, TRA has completed the "Crossover Construction between Chidu and Badu", reliefing the traffic jam between

Shulin and Chidu as well as enhancing the operation efficiency of east and west lines which had established good foundation for planning future railway system. In order to improve operational performance, TRA focuses on the development of subsidiary enterprises, actively promoting the Songshan Station BOT project, such as assets vitalization plans. In addition to providing convenient transporting system, the multi-functional station space is also achieved, which has successfully set an example for station service quality enhancement, reducing government financial burden and establishing railway life network. In addition, TRA was honored by the 15th Golden Thumb Awards of MOF in 2017.

To conserve railway culture in Taiwan, TRA engages in cultural assets conservation, railway culture assets revitalization. Besides signing an MoU of "Taipei Workshop Railway Museum" between Ministry of Culture and Ministry of Transportation and Communication, TRA also actively cooperates with local governments to construct cultural assets (monuments, historical buildings and old houses)

as the art exhibition venues or new landmark of art to carry out corporate social responsibilities. Meanwhile, not only to maintain historical railway traces, TRA also pursues innovation aggressively and has developed "50kg-N#12 DSS point rail" to and successfully decreased the procurement costs significantly and enhanced the railway technology. There are also smart toilets, Al breast feeding rooms, Indonesian or Vietnamese guidance at major stations continuously providing more comprehensive and higher quality services to the public.

Being able to connect to the world, broad our vision and be innovated are the keys to be competitive to this global world.

On July 4th in 2017, TRA and Kintetsu Worldwide Express from Japan signed a Railway Friendship Agreement for in depth interchange and cooperation of overall business. Furthermore, to celebrate the 130th year of TRA, we celebrated Taiwan Railways Anniversary and 3rd Formosa Railroad Bento Festival, we invited many famous international railroad companies to participate with us to striving for marketing promotion and deepening international reputation. Through multi-

party interactions, the railroad travel in Taiwan could be enhanced efficiently to create mutual tourism income and economic development.

At this critical moment of heading toward the 130th anniversary, TRA is also situated in the turnpoint of development. In the future, TRA will head to the goal of 30% or more income coming from subsidiary enterprises, providing travelers and local people with diverse services combining with culture and art as well as stabilizing professional transportation business, reinforce basic service facilities. As we are facing the railway market challenges in the future, TRA will be fully prepared to develop railroad businesses with full strength and cultivate a trustworthy "touching quality" brand of TRA.





1. Vision and Strategic Goals

(1) Vision

To create railroad living environment with good quality public transporation system. Aim customer satisfacty and operate the dual-core business featuring the transport and affiliated businesses.

(2) Strategic goals

- 1. To build safe, punctual, reliable services, efficient and green transport environment
- 2 \ To actively improve operational equipment to attain universal, friendly and informational standards
- 3 \ To promote fleet quality, innovative transportation services
- 4 \ To develop affiliated business and assets revitalization
- 5 ` To create features of railroad living culture.

2. Operational policies

(1) Operational management

- 1. To strengthen medium to long-distance cross-city transport (Taipei-Taitung, Taichung-Hualien and Taipei-Kaohsiung) of the Eastern and Western Line; and reinforce regional communication transport of the Western, MRT-oriented train from Keelung to Pingtung to achieve the goal of public transportation integration within the whole island.
- 2 To promote seamless transport by integrating with the tickets, timetables, and stations of intercity bus, local bus, MRT, and THSR, in order to develop diversified, convenient and quality transport services.
- 3 To enforce universal design, continuously build accessible spaces, and shape a modern and friendly transport environment.
- 4 To launch horizontal alliances, strengthen marketing strategies, provide custom services, and cultivate new customer groups by integrating with the railway culture.
- 5 To enforce environmental awareness for sustainable development and human-based

- design concepts; to develop travel and living services through effective utilization of existing assets; to create transit-oriented development (TOD) benefits by integrating transport infrastructure construction with land development to realize "TRA connects beautiful life".
- 6 To promote the Asset Revitalization Repayment Plan to quickly repay debts through various ways of development, such as promoting private participation in infrastructure projects, urban renewal (regeneration), and creating a right in rem of superficies, on prioritized quality assets.
- 7 To reinforce the in-service training and evaluate employees regarding risk management and crisis response, to strengthen the disaster prevention and counter-terrorist mechanisms to improve the emergency response ability, in order to maintain train and passengers' safety.
- 8 To carry out railroad research and development, organizational adjustment and talent training.
- 9 To reinforce internal communication and coordination with the organization in order to develop labor-management harmony.

(2) Balancing supply and demand

- 1. To continue the purchase and replacement of railway vehicles for operations and simplify vehicle types to improve service quality.
- 2 To continue the relocation project of the Kaohsiung Railway Workshop and improve train maintenance technology and quality to ensure train safety; and to promote the development and operations of the original workshop sites to preserve the railway culture and expand the scope of affiliated business.
- 3 To continuously manage the Train Operation Safety Improvement 6-Year Plan, reinforce joint inspection and disaster prevention and protection measures, consolidate infrastructure construction to improve driving efficiency, safety and service quality enhancement.
- 4 To progressively promote the "Automated Railway Scheduling System" and enhance scheduling and dispatch capacity to ensure that the supply planning of transport capacity can closely meet the transport demand of passengers.

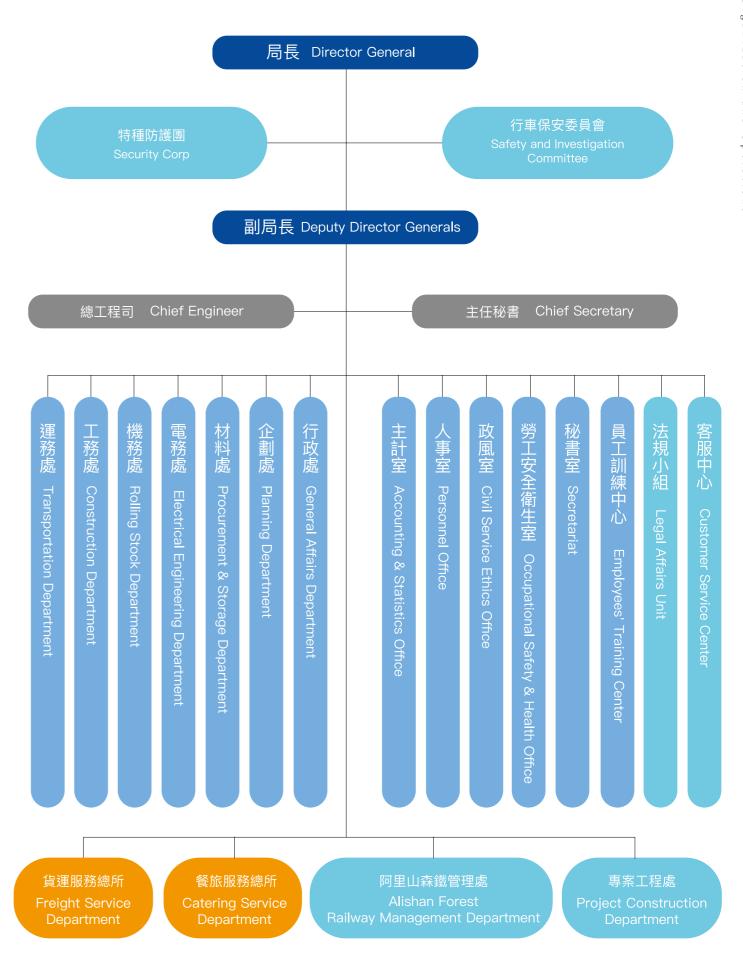


I.Organization and workforce

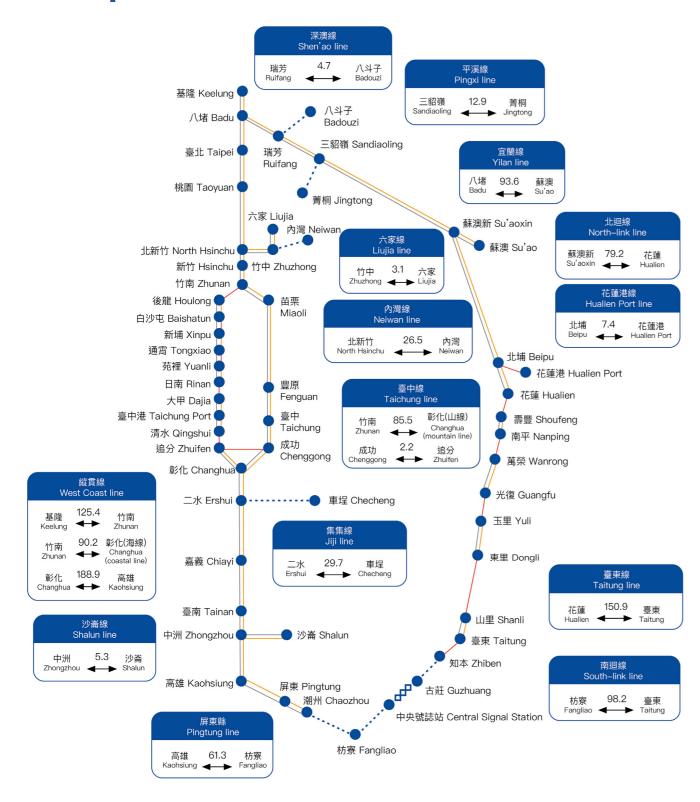
At the beginning of the Taiwan restoration, the central government commissioned the former Taiwan Provincial Government to take over the operations and management of the railways in Taiwan. In 1945, the Taiwan Railways Management Commission was founded. In 1948, the Taiwan Railways Administration was established and became an agency of the Ministry of Transportation and Communications(MOTC) since 1 July 1999. In terms of staffing, under the Director General, Deputy Director Generals, Chief Engineer, and Chief Secretary, there are 13 operational units including the Transportation Department, Construction Department, Rolling Stock Department, Electrical Engineering Department, Procurement & Storage Department, General Affairs Department, Planning Department, Accounting & Statistics Office, Secretariat, Personnel Office, Civil Service Ethics Office, Occupational Safety & Health Office, and Employees' Training Center; and six task forces including the Security Corp, Legal Affairs Unit, Safety and Investigation Committee, Project Construction Department, Customer Service Center, and Alishan Forest Railway Management Department. In addition, there are two affiliated units: Freight Service Department and Catering Service Department; and 43 branch units, including plants, depots, centers, offices and teams outside of TRA. The 2017 planned workforce consisted of 14,788 employees, and the actual workforce as of December 2017 consisted of 13,795 employees.



TRA Organization Chart (simplified)



II. Operational Facilities

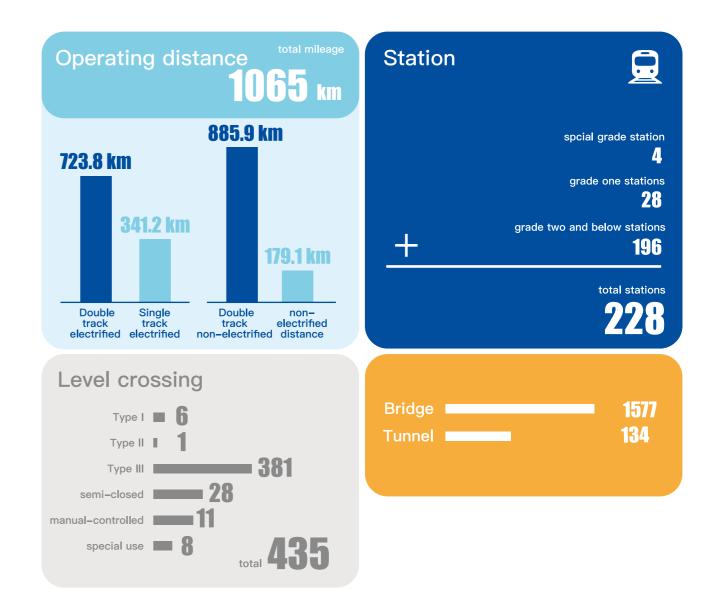


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(1) Operational Mileage

Data by the end of 2017 Operating distance 1065.0

- Double track electrified 707
- Single track electrified 178.9
- Double track non-electrified 16.8
- ---- Single track non-electrified 162.3



(2) Number of trains and utilization efficiency

1. The total number of trains by the end of 2017



There are also 1,019 EMUs, 216 tilting EMUs, 211 diesel passenger trains, 927 passenger trains, and 1,691 cargo trains.

2. Utilization efficiency

The 2017 locomotive availability was 88.72%. Among them, the electric locomotives accounted for 90.79% of the total number, Push-pull electric locomotives 91.36%, diesel-electric locomotives 82.05%, diesel-hydraulic locomotives 90.54%, EMUs 88.19%, tilting EMUs 98.1%, and diesel passenger trains 88.09%.



Keynote Report – TRA 130th Anniversary, a life love of TRA

To celebrate 130th anniversary, TRA extensively organized railway festival activities in 2017 to promote the ideas of services for public, sharing joy with public as well as to show the international image of TRA.

[Planning Period]

The public tender for "TRA 130th Anniversary and Railway Festival Activities" was organized in November 2016. To show the vivid image of activities, the catchy slogan "TRA 130, a life love of TRA" was selected by poll in March 2017. In addition to vivid visual design, the slogan and the main visual design were integrated with affiliated peripheral works for promotion.



[Promoting Period]

For railway festival series, the first round of promotion was started from "train is approaching the station" on Facebook

from April 14 to April 30, 2017. There were total 4,622 thumbs up, 3,672 messages, 1,077 sharings of public, and the reponses were enthusiastically.

The second round promotion "find 130" was launched since May 1, 2017. The image of 130 was presented though innovative manners to celebrate 130th birthday of TRA. Three special prizes were drawn from all participants with contribution as satisfactory to the standards (one traditional style instant camera each), 10 celebration prizes (one 130th anniversary souvenir each).







Find 130



"TRA 130th Anniversary, a Life Love of TRA " press conference

[Festival Month]

For media promotion, the first railroad press conference was held at multi-functional exhibition hall on 1st floor of Taipei Main Station on June 2, 2017. There were "happy painted train", "international railroad celebration", "major stations celebration", "celebration memory", "station feast", "railroad product marketing" such six major exhibition areas. Meanwhile, the stationmasters of all major stations were arranged to walk the runway, accompanied by Oh Bear, Travel Bear, Zuo Zuo & Ying Ying acting such mascots as cute trainmasters to drumup the activities.

As to the Facebook commercial, the fan page messages were exposed for 42 days to increase the activities exposure, attracting more people and passengers to cooperate with this great event.



Up: Severl Japanese
railroad companies
attended the event to offer
congradulations
Bottom right: the Director—
General accepted round
island electric tablet from
stationmaster of Taipei Main
Station Mr. Huang
Bottom left: video
broadcasting venue





The 3-day activities and TV program interview at the lobby of Taipei Main Station on 1st floor









The 3-day activities and TV program interview at the lobby of Taipei Main Station on 1st floor

[Festival Day]

There were total 16 Japanese railroad companies assigned officers to attend the railroad festival on June 9. The video "Round Island Relay 130" was planned in the event. The electric train tablet was the relay baton handed over by the stationmasters and staffs of all major stations. The personnel of administrative division and cameramen took a week to shoot the film of whole island starting from Taipei. Finally, the electric tablet was delivered by the Taipei Station master Mr. Huang to the Director–General, representing the completion of round island trip. It symbolizes good inheritance of TRA people and create beautiful vision through concerted efforts.

On the other hand, several locomotives built in scale 1:80 collected by Mr. You, Wen-Jing, N scale train operation show, model train operation club, prototype small train operation experiences were held at lobby of Taipei Main Station from June 9 to 11, attracting railroad fans, families, tourists and travelers for participation.

2017 railway festival had attracted 14 (41 reports) newspapers, 9 (18 reports) Internet media and 3 TV reports.

[Major Station Activities]

To celebrate 130th anniversary of TRA, in addition to Taipei Main Station, there are also celebration activities held in 21 stations islandwide. Among them, Banciao Station held large activity inviting Yulin Guzheng Band, SHU JEN High School of Home Economics & Commerce, Banqiao Senior High School for performance. Hsinchu Station invited community college for belly dance and quiz game. Hualien Station organized large birthday party, inviting the orchestra of Ming Chi Elementary School and Hualien County Wind Band for performance, Hualien County Mayor Fu, Kun-Chi attended the event. Pingtung Station sold "Solar City Transformation Brand New Pingtung Station" memorial platform ticket set, people were enthusiastic at the event and gave good response.









The 130th anniversary serial activities were broadenly held in 2017. With aggressive cooperation and assistances of all units, the activities were successfully completed, while had achieved the goal of fun with public and TRA image enhancement.

I. Achievement

(1) Strengthening cooperative and exchange with international railway companies and reciprocal measures for passengers

1 Crossing Taiwan and Japan! Second Round of Railroad Stamp Collection Relay Game



TRA and Japan Seibu Railway, Keikyu and Tobu Railway jointly organized the stamp collection activities – Second Round of Railroad Stamp Collection Relay Game from January 27 to July 31, 2017. The second round adopted the idea of tour of energetic scenic spots (temple), allowing participants to visit representating

Crossing Taiwan and Japan! The cover of second round of railroad stamp collection relay

energetic scenic spots in Taiwan and Japan. All these railway companies placed the memorial stamp at stations close to the energetic scenic spots, such as Seibu Chichibu Station (Mitsumine-jinja Shrine, Hodosan-jinja Shrine, Chichibu Shrine), Keikyu Misakiguchi Station (Kijima), Tobu Tokyo Skytree Station (Sensoji, Asakusa Shrine) and TRA Dajia Station (Chenlan Temple), total in 11 stations. Among the 11 stations, the participants may exchange "original PET bottle bag" with stamps of 2 Japanese stations, 2 Taiwanese stations and either one of another stations. Those who collected stamps of all 10 stations would receive prize drawing postcard to enter the prize drawing game. The participants may have the chance to win "Chiba Prize" (special prize provided by all railway stations.) The activity was responded enthusiastically by Taiwanese and Japanese

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tourists.

2 The anniversary of agreement with Japanese JR Shikoku, both parties organized friendly stamp collection activity altogether

TRA and JR Shikoku of Japan signed an agreement of friendly cooperation in February 2016. Both parties continuously keep friendly relationship and try to deepen the exchanges between Taiwan and Shikoku Japan. To commemorate the anniversary of the agreement, TRA and Japan JR Shikoku held "TRA x JR Shikoku Friendly Stamp Collection Activity" from March 30 to October 13, 2017. The idea of this activity was based on travel around all stations. Both Taiwan and Japan selected 10 representing stations and people who collected 5 or 10 stamps during the activity period may exchange limited "5 station stamp prize" and "Taiwan Japan anniversary mark". It was to attract tourists taking train to travel Taiwan and Japan Shikoku while enjoying the fun of collecting stamps!

3 \ Train appearance exchanging with JR Shikoku

TRA and JR Shikoku of Japan introduced train appearance exchange activity. JR Shikoku had painted its 8000 series like TRA 800 smile trains driving to and from JR Shikuko Yosan Sen (between Takamatsu Station and Uwajima Station). TRA also introduced model 800 smile train with appearance of JR Shikuko 8000 series on June 2, 2017 to celebrate the anniversary of agreement of friendly cooperation between Taiwan and Japan.



Model 800 local train with JR Shikuko appearance

4 \ Sister railway agreement between Su'ao Line and Choshi Electric Railway Co., Ltd.

Both TRA Su'ao Line and Japan Choshi Electric Railway Co., Ltd. (hereinafter the Choshi Railway) are 2 hours trip away from the capital and both the coastal township leading to Pacific Ocean. They play important roles in the link of local sightseeing spots. Therefore, they have many common features. Both parties signed the agreement for sister railways at the square in front of Inuboh Station of Choshi Railway to solicit passengers, vitalize local economy and promte international exchanges between Taiwan and Japan.

5 Agreement of friendly relationship with Kintetsu Group Holdings of Japan

Kintetsu Group Holdings Co., Ltd. (hereinafter the JP Kintetsu) is centered on the transportation businesses, meanwhile running diversified businesses, such as real estate, mall, hotels, leisure and entertainment. Its railway operation crosses Osaka, Kyoto, Nara Ken, Mie Ken and Aichi Ken areas. Both TRA and JP Kintetsu have history over a century. In recent years, TRA continuously promotes industrial development and JP Kintetsu is worthy to learn no matter from the perspectives of transportation, leisure and entertainment. Therefore, both parties signed the agreement of friendly railway on July 6, 2017. It is hoped that this exchange may lead the tourism businesses to each other and stimulate future development.



TRA and JP Kintetsu Group Holdings signed the agreement of friendly railway

6 Sister Station Agreement between TRA Guanshan Station and Echigo TOKImeki Railway Sekiyama Station of Japan

Japan Echigo Tokimeki Railway mainly operates "Japan Jade" Line" and "Haneuma Line", with total distance 98.3km and total 21 stations. Among them, Sekiyama station was originally a station on JR East Japan Shinetsu Line and the operation was transferred to Chigo Tokimeki Railway afterward. It is the oldest station on Haneuma Line and the scenery along the line is a feast for the eyes. One of the TRA stations also has the same name — Guanshan Station, situated between Central Mountain and Costal Mountain. It is one of the important stations in south of Huatung Line as well as the start for Southern Cross Highway from Taitung to Tainan. TRA Guanshan Station and Echigo TOKImeki Railway Sekiyama Station of Japan share the same and the sourrounding sceneries of two stations are both beautiful. The sister station agreement was singed on November 10, 2017. It is hoped to promote railway tourism exchange between both parties and promote railway line vitalization.



Sister Station Agreement between TRA Guanshan Station and Echigo TOKImeki Railway Sekiyama Station of Japan

7 `The technology exchange seminar between TRA and RTRI

To enhance the cooperation between TRA and RTRI and cultivate railway talents, the technical visit and exchange seminar was held at Conference Room 1 of TRA on Jun 15 and 16, 2017, total in two days. The Director-General

of TRA Mr. Lu, Chieh-Shen presided over the seminar, the Department of Railways and Highways, Transportation Research, Railway Reconstruction Bureau and Bureau of High Spped Rail, MOTC, the President of Internation Development Department of Japan RTRI Toru Miyauchi and 7 members, Deputy Chief Engineer of TRA Hsu, Hui-Yuan leading executive officers were invited to attend the event. The topics of this seminar included catenary, track system, vehicle and international standerization to improve professional techniques and transportation service quality through railway technical exchanges and experiences sharing.





RTRI Seminai

(2) Developing cultural and creative railway products with brand value

1 Limited sales of classic traditional pocket watch

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Special selected 130 Swiss OMEGA railway pocket watch with precise calibration made by professional watch master

and dedicated woodbox, and supplemented by "beautiful platform steel image" frame design, story of time, the feelings of years goes by. It shows extraordinary value. The price is NT\$49,999.





Limited antique pocket watch

2 · Promote the new Taroko Express related products licensed by Sanrio



There are already 68 new Taroko Hello Kitty Train series products developed by now. The royalty income for 2017 projects was over NT\$1.3 million. The hot sales products are stainless meal box, train model game play set, 8" stuff dolls and small toy train etc.

New Taroko Hello Kitty Train related products

3 · Publish "2017 3rd Formosa Railroad Bento Festival Memorial Stamp Folio"

The first stamp folio collects 12 railway companies of 3 countries. People may grasp the railway scenery of Japan and Swiss all alone via each railway scenary postcard and TRA memorial stamp and increase the stamp folio collection value.



Memorial Stamp Folio

4 \ The Memorial Bento Set was introduced to cooperate with the festival

The 10th generation DRC 1000 of "TRA Legacy Inheritance, 12 generation family series" and "Summer Formosa Express" stainless Bento set were introduced in 2017. There were total 8,400 sets sold. Meanwhile, to cooperate with "TRA 130th anniversary", the medical level material SUS316 stainless Bento set was introduced for the first time.

Left: The 10 th generation DRC 1000 of "TRA Legacy Inheritance, 12 generation family series" Central: "Summer Formosa Express" stainless Bento set Right: TRA 130 th anniversary, the square SUS316 stainless Bento set







5 \ Promote various railroad products

The classic products were introduced to cooperate with various festival activilites, e.g.: TRA delicate pen produced for guests in cooperated with important events of TRA; Railrod Bento Cooler Bag, 316 stainless iron chopsticks and travel bear products (2 types of silicon wallets, 3 types of bag hooks and loho lunchbox gift) introduced to cooperate with 130th anniversary festival and 3rd Formosa Railroad Bento Festival, TRA character keychain, train styel water, New Taroko Hello Kitty Express Model, Bento zipzac bag, traditional bento keychain, bento postcard, bento folder and bento magnet; New Taroko Hello Kitty Series Pineapple Cake (the packs for 3, 6, and 10 pieces respectively) introduced

to cooperate with Middle Autumn Festival; to welcome the incoming 2018, See Beautifual Formosa Railway calendar and 2018 Huatung, Secret Spot, Mini Tour postcard desk calendar were introduced.





Left: Puyuma Pen Gift Box Right: New Taroko Hello Kitty Express Model

(3) Extensively organized "2017 3rd Formosa Railroad Bento Festival"

In "2017 Taiwan Gourmet Food Exhibition" at Taipei World Trade Center Hall I during the period from July 21 to 24, 2017, the 3rd Formosa Railroad Bento Festival activities were planned deliberately. In addition to train service department and Taipei Restaurant, Taipei Post Office and 12 foreign (10 from Japan, 1 from Swiss and 1 from Korea) railway enterprises were also invited to cooperate with the great event. The total turnover exceed NT\$2 million, and total 126 media reports (TV, plane and Internet). The exhibition planning company estimated the commercial value was around NT\$13.03 million, which had created excellent benefits and significantly promote the international fame of TRA.





Photos of Formosa Railroad Bento Festival activities

(4) Diversified innovative Bento flavor

1 To celebrate Taiwan Tourism Festival, the Oh Bear Bento produced by Qidu Meal Office of TRA Train Service Department was introduced on February 8, 2017. There were "Oh Bear Roasted Pork Shoulder" and "Black Rice with Muschroom & Vegetables" such 2 new flavors introduced, providing customers with more diversified selections.





Left: Oh Bear Roasted Pork Right: Black Rice with Muschroom & Vegatables

2 \ To reinforce the services to passengers taking Taoyuan Airport MRT, TRA especially introduced "Pumpkin Rice Noodle with Chiken Leg" and "Traditional Flavor Stewed Pork" 2 featured meal boxes.



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Left: Pumpkin Rice Noodle with Chicken Leg Right: Traditional Flavor Stewed Pork





TRA Clay Pot Rice

liver sausage and western style bacon are the main courses accompanied with Taiwanese mushroom, cabbage, and cabbage mustard such vegetables. It smells good and has good taste leading endless after tastes.



4 \ To promote Hakka diet, TRA Taipei Railrod Restaurant, Hakka Affairs Bureau of Taoyuan City Government and Vanung University jointly developed "Hakka Red Yeast

Hakka Red Yeast Chicken Thigh Meal Box

Chicken Thigh Meal Box", providing consumers who love Hakka flavor a new meal selection.

5 \ To respect the elderly and wise, TRA Taipei Railroad Restaurant especially introduced a featured meal box reducing the burden of body before Double Ninth Festival - "Teppanyaki Scallop Meal Box". It improves general Japanese combo seafood teppanyaki dishses and becomes a teppanyaki meal box perfect in color, aroma and taste.



(5) Revest drive of Alishan Forest Line "Fenchi Lake ~ Cross Section" and "Shenmu~ First Segment Section"

After being damaged by Typhoon Morakot in 2009, there are still some sections of Alishan Forest Line could not be restored for operation. To respond the eager expectation of public, TRA Alishan Forest Railway Management Department revest the drive from Fenchi Lake to Cross Section and Pingjhena to Shenmu section. It had passed temporary inspection of the Supervisory Section of MOTC before the revest drive in 2017. The operation section of Alishan Forest Railway had been extened from Fenchi Lake Station to Cross Section since July 3, 2017, and from Shenmu Station to First Segment Section since July 5. The cruise train was adopted at preliminary phase and additional Chungshin trains from Chiayi to Cross Section are driven on Saturday and Sunday since September 1 to satisfy the need of transportation.

(6) Extension of e-pass access area

For the convenience of passengers, TRA integrated various types of e-tickets with the multi-card system (EasyCard, i- pass, icash and HappyCash). The range of multi-card system was expended to all stations (except for Hualien Port Station, and Fangye Station) of the whole line and branch line (Pingxi Line, Shen'ao Line, Neiwan Line, Liujia Line, Jiji Line and Shalun Line) on June 28, 2016. The daily average users were 390,000 in 2017,which is 60% of daily average travel passenger.

(7) Offering convenient booking services

1 · Convenient store booking and collection services

In 2017, there were about 25,985 persons booked TRA tickets through convenience stores every day, which was 20.6% groth from the daily average about 21,543 persons in the previous year. To provide citizens with more convenient booking service, we will continue to offer booking and collection services at 7–ELEVEN, Family Mart, Hi–Life, and OK Mart to increase ticket collection channels, in order to save ticket purchasing time and cost for passengers, improve TRA's level of service, and meet the trend of E–society.

2 \ 24-hour on-line and voice booking services

Passengers can book any same-day train one hour before the scheduled departure time through the on-line or voice booking and collect and pay for the tickets no later than half an hour before train departure. Both services are available round-the-clock for the citizen's convenience. In 2017, passengers collected tickets in 14.64 million bookings.

3 \ Real-name booking services in Hualien and Taitung

The "real-name booking system for Hualien and Taitung citizens" was managed continuously. The citizen with ID card number beginning with "U" or "V" and people with household registered in Huanlien or Taitung are available for the booking. In 2017, the service was provided to total 14,163 passengers in Hualien and Taitung.

(8) Member service system

TRA introduced the membership system on March 30 2011 to raise the satisfaction and loyalty of customers with the member booking service. By 2017, there were 250,183

members, and the system successfully matched 44,675 transactions, with a matching success rate at 19%.

(9) Bike eco-trains

To support energy conservation and emissions reduction and meet with the cycling trend, we continued the bike ecotrain service for the eco-delivery of bicycles. In addition to offering a 50% discount for bicycle fares, the total number is collectively controlled by the station window ticket system since March 1, 2017. Passengers may buy the tickets directly from all TRA station during the ticket selling period. In 2017, we transported 122,751 passengers and their bikes.

(10) Continuing group tickets and charter train services

To improve the travel comfort and convenience for foreign and domestic tourists TRA extend the accessibility and scope of travel, to promote new railroad travel development. In 2017, TRA accepted 589 groups 180,578 persons, creating a revenue of NT\$61,534,565.

(11) Steam Locomotive tourist train

1 The 5th anniversary of SL, CK124 sister trains

To celebrate the 5th anniversary of sister steam locomotive (SL) train agreement for TRA CK124 and JR HokkaidoC11 SL, TRA especially introduced "2017 5th anniversary of SL CK124 sister train — one day spring train tour". The SL is integrated with the scenery along mountain and coastal line, leading passengers to appreciate special costal view by taking CK124 coastal line heading north from Changhua Station to Zhunan Station. The return trip headed sounthbound of mountain line from Zhunan Station to Changhua Station. Tourists may enjoy different natural scenes and urban rural towns along the mountain and costal lines.

2 \ Summer Formosa SL Express

The Summer Formosa SL Express were opened for six trips on three different days: June 24 and July 1 and July 8,2017. As usual, it was led by CT273 SL and carry 5 air-condition carriages from Yuli to Taitung Station. Passengers may experience the retro fashion of SL train as well as the super beautiful view of Hualien and Taitung Cliff. In 207, the trips managed by TRA attracted about 750 passengers, and the ticket income was around NT\$1.25 million.

(12) Continuing scholarly station promotion

To cooperated with the book exchange activities of MOTC, TRA consecutively cooperates with all county and city governments and private groups. By the end of 2017, there are already 54 book exchange points providing second hand books for passengers. In addition to reproduce relevant facilities to other stations, TRA also actively promotes the book for collecting activities to take on the role of beautiful life connection aside from the transporation function.

(13) All the controlled public toilets are upgraded to grade A and above

TRA manages 640 public toilets, which were all graded A or above as of October 16, 2017. Among them, 490 toilets were A+, accounting for 77% and the efforts will be continued in the future.

(14) Acquiring "Information Safety ISO27001:2013" certificate

According to information safety security classification of governmental agencies (institutions), TRA had been upgraded from level B unit to level A unit in 2016 and the ISMS promotion procedures must be completed and ISO27001:2013 certificate through verification of third party is required. TRA Information Center passed ISO27001:2013 certification by third verification party of SGS on November 3, 2017.

II.Business Innovation

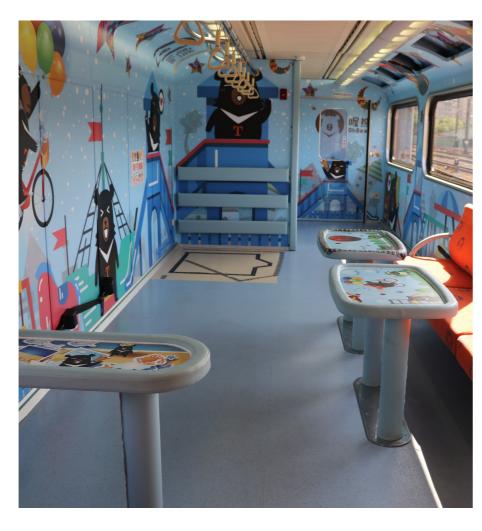
(1) Assisting Chunghwa Post to set up i-mailbox at TRA stations, creating diversified services TRA completed the bargain contract with Chunghwa Post Co., Ltd on August 14, 2017 to set up 111 i-mailboxes at 96 stations and the installation started from December 2017. The service is expected to be available by the end of April 2018.

(2) Promote Internet version of "Personnel Salary System"

- 1. All internal and external systems of relevant agencies are integrated through information technology and the personnel salary process is restructuring to horizontally incorporate all TRA internal system and vertically integrat relevant system of all competent personnel authories
- 2 Employee pay lists are distributed via E-mail to achieve the goal of paperless.

(3) Push-pull Tze-Chiang Express affiliated parent child cars

At the beginning of parent child car trial operation, the train 418 and 443 for chartered groups on Sunday are received via facsimile. The first train was set off on August 6. As of October 22, there were total 14 trains carrying 168 passengers. TRA consecutively completes the parent child cars remodeling to allow more children and parents taking the train altogether. The number of parent child cars will be increased depending on the progress of remodeling.



Interior decoration of parent child car

(4) Yilan Hualien Taitung highway transit discount e-pass device

Since October 3, 2017, a passenger who takes train to Yilan, Luodong, Xingcheng, Hualien, Yuli and Taitung with TRA ticket and slides the e-ticket at multi-card exit gate for mark may transfer to national highway or highway bus with discount ticket fare 21NTD and half-price ticket 11NTD and one session free for taking local bus (depending on fare of local bus) within 6 hours. Those passengers taking TRA trains with e-ticket may also enjoy preceding discount without sliding the e-ticket at multi-card exit gate but exiting the station

directly from e-ticket pass gate or standing ticket pass device. It is to increase the number of people using e-ticket at eastern line through transit discount measures.

(5) Cooperate with Tourism Bureau for issuance of "Taiwan Tour Bus + TRA Tour Passport"

In consideration of rising number of backpackers, promoting domestic tourism industry and stimulating domestic travel, consumption, TRA assisted Tourism Bureau to manage "Taiwan Tour Bus + TRA Tour Passport" project for one year from August 1, 2017 to July 31, 2018. Passengers may enjoy 15% off for purchasing ticket at TRA ticket selling window for taking train in two sessions (regardless of the distance) with the discount coupon in the passport during the activity period. The train and bus coupon allied operation allows passengers enjoy travel with logner distance, depth and different transportation tools.

(6) Indonesia or Vietnamese language services are available at 9 stations

TRA recruits personnel pay by the hour who are familiar with Indonesia and Vietnamese languages to provide consultation and guidance services at Taipei, Banqiao, Taoyuan, Zhongli, Taichung, Changhua, Tainan, Kaohsiung and Pingtung such 9 major stations.

(7) First "smart toilet" in Songshan Station

TRA Songshan Station initiated "smart toilet" in May 2017. Through the detection of infrared ray, the station would know the time of empty bath tissue roll and remind on officeron–duty and cleaning personnel changing the tissue paper to keep environmental clean and tidy. It honored "station maintenance category: exceptional, Grade 1 Station" top prize of the 2017 MOTC Golden Way Awards.

(8) First "Al Breastfeeding Room" in Taoyuan Station

TRA Taoyuan Station initiated "Al breastfeeding room" in September 2017. Through human infrared ray identification incorporated with blue tooth and Wifi, when a user enters the breastfeeding room, the "in use" panel will be triggered to remind next user that this breastfeeding room is in use. There is also dedicated pad for the user to notice service counter via LINE or call for accidental situations.

(9) Achievements of innovative route maintenance

50kg-N #12 DSS point rail manufacturing

40

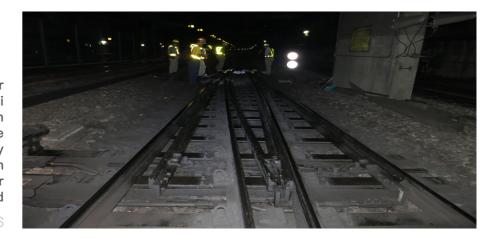
DSS (Double Slip Switch) was constructed at the south end of 4th platform of TRA Taipei Main Station in March 2004. The JIS 70S steel rail was adopted for the point rail, the length of middle point rail is 18m and the lengths of point rail on both sides are 11m. The purpose of DSS is to greatly save the staion space as convenience for the route switch of trains. When the train is moving, the wheel edge would closely

(1) Source: Statistics of Train Passing Tonage of TRA Construction Department Division from January to December 2015 against the curve point rail when outer wheels pass the diverging side of swith due to fixed spread of axles and centrifugal force, casuing the friction to steel rail and weary of inner head of steel rail. Besides, the point rail section area is small and easily causes centralized wear and tear. Although the service life of swith is 8 years for TRA routes, the point rail needs to be replaced in 5 years in average due to small radius of middle point rail of DSS and small curve and point rail section area easily causing centralized wear and tear as well as taking the consideration of 23.37 million tons(1) passing the DSS of Taipei Main Station every year.

The processing started after the dimension and processing procedures are confirmed. The supervisor led workers on site to go though rail sawing, measurement, mark, drill, rail bending and polish such procedures (see figure 1~20). During that period, the supervisor will teach the matters for watch, construction methods and measuring mark highlights to newly recuited workers. In addition to the completion of this work, it would further carry out the technical inheritance. This research and production work was transported to Qidu Marshalling Yard on December 13, 2016. The road was sealed at midnight on October 26, 2017 for the construction. After 25 days of train operation, TRA Construction Maintenance Headquarter and Taipei Construction Branch personnel inspected the running-in of point rail and basic rail and understood the train operation conditions altogether on November 21, 2017. Upon the confirmation of functional point rail and smooth train operation, we will continue to trace the wear away of point rail and prepare spare parts for the replacement of TRA Taipei Construction Branch.

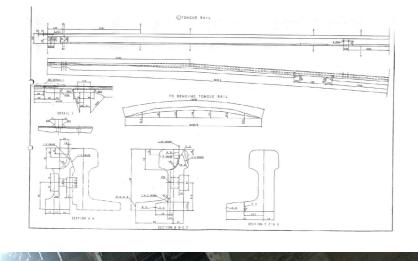
All the materials for middle point rail of Taipei Construction Branch have been used and the procurement or supply of TRA Construction Maintenance Headquarter is required

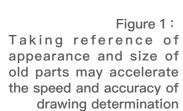
Taipei Main Station DSS



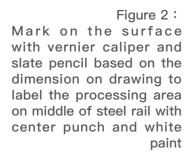
DSS point rail is complicated in term of dimension. The relevant dimension must be confirmed carefully before the construction

DSS dimension drawing





The old parts disassembled from original Taipei Main Station



Size marking





Figure 3: Use external extension support to fix the steel rail on machine

Processing parts fixed on milling machine





and toe of rail cutting operation

Figure 5: The flexible part of rail bottom cutting is mainly to remove a trapezoid part

Flexible part cutting

Figure 4:

required

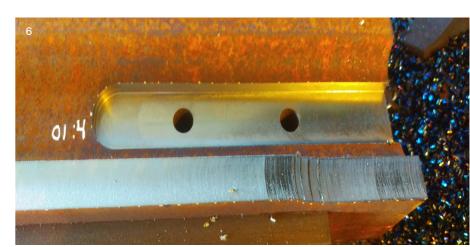


Figure 6: The thread fixing groove cutting is completed

Completion of thread fixing groove cutting

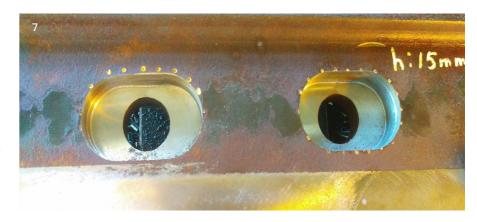


Figure 7: The long hole diameter cutting is completed, with depth 15mm

Long hole diameter cutting

Figure 8: It needs to reserve partial length for the part holding of milling machine during bottom processing

Rail bottom cutting



Figure 9: The step side cutting is completed Step side cutting

Figure 10: Place the checking gauge on steel rail section to label the section processing shape on steel

Mark the end with checking gauge

rail rapidly and correctly

Figure 11: Stretch the cottom rope and mark the wheel edge line and tightness line position on stepping surface

The mark of tightness line

Stretch the cotton rope on curve point mark to

confirm the size after rail



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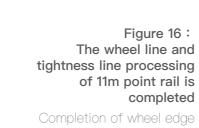




Figure 17:

Assembly test

point rail trial assembly



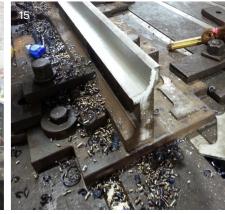
Figure 14: Fix the steel rail on plane machine after the size

label is confirmed Tightness line planing



Wheel edge planing





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Proceed 18m and 11m

Curve point mark

Figure 12:

bending

Figure 18: confirm that two point rail bonding is tightened Tightness confirmation





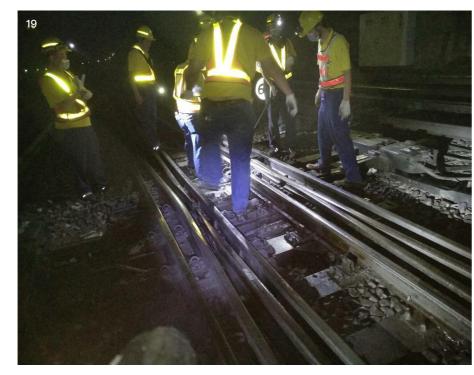


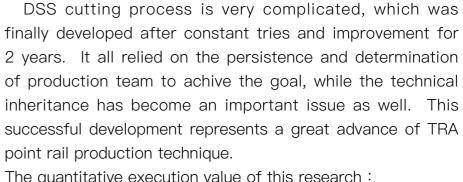
Figure 19: The route was sealed for construction at midnight on October 26, 2017

On site construction



Figure 20: Inspected the operation condition on November 21, 2017

Inspection after the operation



The quantitative execution value of this research:

- a. Build the spare parts to reduce risks of train cancellation
- b. After the production, it could be provided immediately to Taipei Main Station for construction. For emergency need, it could be produced and supplied immediately
- c. Procurement costs reduction: Small quantity, special product and single part purchase may cause difficulty in terms of procurement. The DSS produced independently by TRA Construction Maintenance Corps may save purchase labor and material costs
- d. Quantitative effect analysis:

Quantitative effect analysis			
Tender:			
18m point rail in the middle:	1 pcs = 400,000 dollars		
11m point rail on both sides:	2 pcs = 600,000 dollars		
Subtotal of point rail set :	1 set = 1,000,000 dollars		
Produced by TRA Construction Maintenance Corps:			
70S steel rail:	2,450 dollar/M \times 41 M/set = 100,450 dollar		
Labor costs:	3 person/day \times 1685 dollar/day \times 20 days = 101,100 dollars		
	Total = 201,550 dollars		
Unit cost effect :			
1,000,000 dollar – 201,550 dollar = 798,450 dollar			
For 10 sats produced by TRA Construction Maintenance Corps for the replacement of			

For 10 sets produced by TRA Construction Maintenance Corps for the replacement of Taipei Construction Affairs Section, it could save the amount in total: 7,984,500 dollars (around 7.98 million)



I. Profit and loss analysis

Profit/loss comparison between 2017 and 2016							
	Unit: thousand NTD						
ltem	2017	2016	Comparison with 2016				
Total revenue	27,386,377	26,882,752	1.87%				
Passenger transport revenue	18,132,149	18,126,453	0.03%				
Freight revenue	624,927	668,099	-6.46%				
Other revenue	7,269,608	6,433,571	12.99%				
Non-operting revenue	1,359,693	1,654,629	-17.82%				
Total expenditure	28,925,132	27,810,064	4.01%				
Operating costs	24,799,972	24,169,677	2.61%				
Operating expenses	1,282,997	1,227,831	4.49%				
Non-operating expenses	2,842,163	2,412,555	17.81%				
Profit/loss	-1,538,755	-927,311	Loss increased by 65.94%				

^{*}Note: 2016 data are approved final accounts, while 2017 data are preliminary final accounts.

Cause analysis

(1) The 2017 revenue from passenger transport amounted to NT\$18,132,150 thousand, slightly increase by 0.03% as compared to 2016 and the second highest over the years. This is mainly attributed to the slightly increase of medium-distance and long-distance passenger transport income. The 2017 freight revenue was NT\$624,930,000, decreased by

6.46% as compared to 2016. This is mainly attributed to the reduction of demand for limestone, sand and cement container transport.

(2) 2017 loss was NT\$1,538,760,000, which was additional loss NT\$611,440 thousand as compared to 2016. This is mainly attributed to the increase of personnal expenses and assets scrape loss for NT\$669,570 thousand and NT\$293,280thousand respectively. The compensation income was reduced by NT\$417,060 thousand, while only the rental income increased by NT\$776,210 thousand.

II. Analysis of passenger and freight transport volume

Status of Passenger and Freight Transport in Past Five Years						
Year	Passengers (in thousand persons)	Passenger transport revenue (in thousand NTD)	Freight tranposrt volume (in thousand tons)	Freight transport revenue (in thousand NTD)		
2013	227,287	16,875,785	10,659	854,719		
2014	232,826	17,892,441	11,012	805,673		
2015	232,217	18,256,200	10,910	759,726		
2016	230,365	18,126,453	9,215	668,099		
2017	232,806	18,132,149	7,764	624,927		

Ridership by Vehicle in Taiwan							
Year	Total	TRA	THSR	MRT	City Bus	Highway Bus	Inland Airway
		Num	ber of Passeng	ers (in thousan	d)		
2013	2,190,585	227,287	47,487	695,667	1,045,843	173,771	530
Structure Ratio (%)	100.00	10.38	2.17	31.76	47.74	7.93	0.02
2014	2,260,915	232,826	48,025	740,814	1,066,896	171,901	453
Structure Ratio (%)	100.00	10.30	2.12	32.77	47.19	7.60	0.02
2015	2,277,977	232,217	50,562	777,715	1,048,555	168,623	305
Structure Ratio (%)	100.00	10.19	2.22	34.14	46.03	7.40	0.01
2016	2,313,127	230,365	56,586	803,093	1,054,273	168,438	372
Structure Ratio (%)	100.00	9.96	2.45	34.72	45.58	7.28	0.02
2017	2,356,521	232,806	60,571	827,734	1,093,161	141,872	377
Structure Ratio (%)	100.00	9.88	2.57	35.13	46.39	6.02	0.02

Source: Monthly Statistics of Transportation & Communications and transportation statistic website data (city bus and highway bus) as of February 13, 2018.

2017 total volume of passenger transport of all vehicle types was 2.36 billion persons, including 230 million persons, or 9.88% of the total, by TRA.

III.Benefit from affiliated businesses

(1) Assets development

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To improve operational performance, TRA has been aggressively engaged in land development through the promotion of private participation in infrastructure projects, urban renewal, and creation of superficies to expand the

scope of affiliated business, in order to increase revenue, improve financial condition and achieve the goal of sustainable railroad business operation. Since the promotion of asset revitalization, significant performance has been seen so far in land development through the promotion of private participation in infrastructure projects and creation of superficies. From the contract execution of the "Taipei Main Station specific zone T9 BOT Project" in December 2004 to the auction of the superficies of land in the Fuhe Section, Zhongzheng District, Taipei City, in November 2015, the total revenue from land development amounted to NT\$3.96 billion. The total revenue from related land development projects amounted to about NT\$414.02 million in 2017, as shown in Table 1.

		Unit: thous	and NTD
Land Development	Project	2017 Reve exclu	
Type	-	Rent	Royalty
Promotion of	Taipei Main Station specific zone T9 BOT Project	60,082	_
private	Nangang Station Building BOT Project	55,759	93,100
participation in infrastructure	Songshan Station Multipurpose Building & multistorey Parking BOT Project	55,581	48,238
projects	Wanhua (East & West) Station Building BOT Project	43,687	_
	International Tourism Hotel Construction Project in Banqiao Station Special Zone II	12,090	9,530
	Creation of superficies on Jingxiu Road, Yuanlin Township, Changhua County	354	715
Creation of Superficies	Creation of superficies in Linyi Section, Zhongzheng District, Taipei City	5,485	24,200
	Creation of superficies in Fuhe Section, Zhongzheng District, Taipei City	1,899	3,300
	Subtotal	234,937	179,083
	414,0	020	



Wanhua BOT Project — T1 aerial photograph

(2) Asset revitalization

To revitalize TRA assets and effectively increase revenue, TRA launched a series of asset revitalization activities, including TRA freight transport service, promotion of private participation in construction projects of stations, malls and parking lots, and the leasing of housing units, land, warehouses, advertising space, photography or filming sites, and space for base sations. As a result, a total of about NT\$1.39444 billion was generated.

Contents and Profits from Asset Revitalization (2017) Unit: thousand			
Item	Content	2017 income	
Freight service	Cement, limestone, sand	2,793	
Leasing	Parking, housing, land, warehouses, advertising space, photography/filming sites, and space for base stations	1 ()69 (21()	
Station Mall	Taipei Main Station, Banqiao Station, Nangang Station, Xinzuoying Station Mall, parking garage of Banqiao Station		
Others	Interest and miscellaneous revenue	18,099	
Total		1,394,449	

Income & Expenditure Statistics of asset revilataion from 2013–2017 Unit: thousand NTD						
Year	2013	2014	2015	2016	2017	
Revenue	1,049,495	1,074,974	1,134,379	1,207,351	1,394,449	
Expenditure	365,901	471,889	453,014	438,199	442,515	
Income	683,594	603,085	681,365	769,152	951,934	

Note: 2013~2016 data are approved final accounts, while 2017 data are preliminary final accounts

(3) Dining & travel service

The dining & travel services are mainly to expand the TRA bento (boxed meal) sales, maintain train service quality, develop tourism (promoting two-day and one-night cruise-style train tour services), promote seat-cover advertising, sell boxed meals on platforms, publish the TR News Quarterly, promote TRA cultural volunteer service, develope railway related products and trademark licensing, establish travel information desk, solicite business for shops in station, and set up self-service lockers and other passenger services. 2017 total revenue was NT\$1,044,030,4995, total expenditure was NT\$628,665,714, and the profit was NT\$415,364,785.

Income & Ex	Unit: thousand				
		2013–2017			NTD
Year	Year 2013 2014 2015 2016				
Revenue	923,909	926,071	1,023,536	1,282,272	1,044,030
Expenditure	514,676	517,869	588,815	618,731	628,666
Income	409,233	408,202	434,721	663,541	415,364

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Note: 2013~2016 data are approved final accounts, while 2017 data are preliminary final accounts

1 Aggressively cultivating the TRA bento (boxed meal) market

In 2017, TRA sold 10,186,603 bento (boxed meal) (average 27,909 boxes/day). The 2017 revenue from bento (boxed meal) sales was NT\$722,307.

2 \ Developing railway travel (promoting two-day and one-night cruise-style train tour services)

TRA manages two-day and one-night (or longer) cruise-style train local tour services by selecting travel agents through open tendering to promote railway travel. In 2017, a total of 25 tours were offered, with an average seat utilization rate at about 69.48%. The total revenue was NT\$9,162,166 (including fares, boxed meals, royalties, and in-car product sales).

3 . Selling bento on platforms

To service passengers and increase revenue, we provide TRA boxed meal vending services at Guangshan and other stations. The rental income in 2017 was NT\$349,344.

4 \ Improving TRA image by commissioning professional teams to operate station malls

We commission professional teams, such as 7-ELEVEN and McDonald's, to operate all the shops in the stations across Taiwan. In 2017, the revenue from commissioning operations was over NT\$138.55 million.

5 · Increasing revenue by leasing space for commercial use TRA Catering Service Department leases part of its waiting-room lounges in all the stations to the private sector to set up various stores, ATMs, beverage vending machines, photo booths, self-service lockers, travel sever centers, etc. 2017 rental income from leasing assets was over NT\$127.84 million.

6 \ Promoting cultural and creative industries and developing railway related products with brand value

The total sales turnover of railway related products (including Train Duty Department and all restaurants) was over NT\$47.92 million in 2017.



I.Passenger and Freight Transport

(1) Passenger transport

1 Strengthening passenger transport for the Eastern and Western lines and TRA & THSR transit services

- (1) To release the traffic jam on National Highway No. 5 at peak hours of holidays, we have added local train expresses running between Shulin Luodong for consecutive holidatys and the route has been extended from Shulin–Hualien stations since 2017 Tomb Sweeping Festival to enhance public transportation efficiency of Eastern Line.
- (2)To improve the operational efficiency of direct trains, the timetable has been slightly adjusted since April 27, 2017. Two non-stop Chu-Kuang Express chartering train #82 and #81 are added for Eastern Line on holidays. For Western Line, Puyuma Express trains #110 and #133 have been changed from running on holidays to running everyday, creating daily living sphere.
- (3)To reinforce the convenience of transfer between TRA and THSR, the timebale has been slightly adjusted since April 27, 2017. The new Tzu-Chiang Express train adds a stop at Nangang Station for Eastern Line, and the transit time has been shorten to 12 minutes in average. The Tzu-Chiang Express train adds a stop at Xinzuoying Station for Western Line, and the transit time has been shorten to 15.3 minutes in average. Meanwhile, the branch line and Fongfu Station have slightly changed the timetable to cooperate with the time of THSR so as to shorten the waiting time for the public.
- (4)To cope with the completion of Qidu crossover line on November 30, 2017, TRA has added Puyuma Express No. 1 to and from Shulin=Hualien every day since December

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7, 2017; the Tzu-Chiang Express train #102 Douliou=Qidu (running on Saturday), train #127 Qidu=Taichung (running on Sunday) are enxtended to Hualien; meanwhile, one additional local express train is arranged to run to and from Shulin=Su'aoxin(Su'ao) everyday to enhance the operation efficiency of Eastern Line; additional 8 local express trains between Keelung= Qidu are scheduled to facilitate the transit of people in Keelung area.

2 \ Providing safe and punctual transport service

Punctuality is the core value of railway transport. The 2017 punctuality rate of passenger trains was 94.85%, which was 0.35% higher than in 2016 (94.50%) and the highest over the past years. This suggests that our efforts to renew train infrastructure and reduce equipment failure rate in recent years are effective. In the future, we will continue to build a safe and punctual railway transport environment to provide passengers with quality transport services.

3 \ Develop international tourist business

The number of visitors traveling between Taiwan and Japan has frequently reached new record high in recent years, and the tourism development is increasing everyday. TRA also aggressively signs agreement of friendship with railway companies in Japan. In addition to the railway business, TRA has launched extensive exchange and cooperation with them in other areas to connect each other and create a win—win situation for both countries. Between 2012 and 2017, TRA has signed agreements of friendship with 18 Japanese railway companies.

4 \ Launching the "Train Etiquette" campaign

The "Train Etiquette" campaign features "courtesy for the vulnerable alighting first, and maintaining travelling order together". By improving station and in-train guide services, and calling for passenger cooperation, we aim to build a quality travelling environment. In addition, in September 2013, we implemented Phase I of the "Platform Queuing Line Project" in some southern stations and all branch lines by marking queue lines on platforms for "Local Train" for passengers to wait for trains in a line. By the end of 2017, we have marked queue lines in 53 stations. In the future, we

will extend the project to other stations to maintain platform order.

(2) Freight transport

1. We encourage cargo owners to prepare their own trucks and reward trucks to carry cargo on the return trip to reduce truck turnover period, expand transport capacity, and enhance operational efficiency. In 2017, the average turnover period of self-owned trucks as 1.07 days, reduced by 6% from 2016 (1.14 days).

2 Among the newly procured 24 diesel hydraulic locomotives (by 4 shipments), 18 locomotives were delievered and accepted in 2017 and dispatched to all the freight sataions for freight train dispatch inside the station so as to improve the car dispatraion efficiency of freight station.

II. Assets development

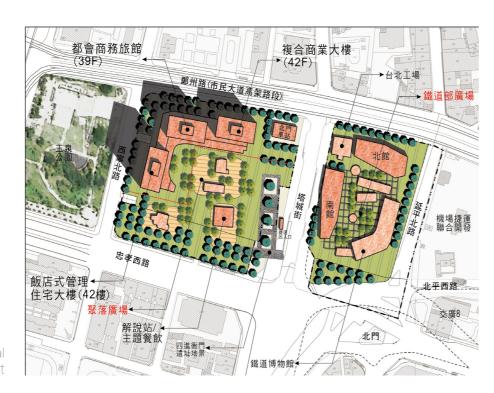
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To cope with macro environment changes, we exploit the niche of infrastructure construction and asset development to maximize the benefit of infrastructure. Through asset development and affiliated business operations, we implement various development projects (including the government's railway construction projects, the Executive Yuan's urban renewal acceleration projects, and the urban development plans of local governments) in accordance with Act for Promotion of Private Participation in Infrastructure Projects, the Urban Renewal Act, and the National Property Act. In addition to the above–mentioned signed contracts, we continued 2 private participation infrastructure projects, 7

government-planned urban renewal projects, 12 private urban renewal projects, and 4 superficies creation projects in 2017. In addition, to facilitate land revitalization and management, we implemented the pilot planning and assessment of 14 asset development projects. The figure below shows the major projects in progress:

	Private Participation Infrastructure Projects					
		Development Area	Franchise Period	Contract Execution Date		
	Wanhua (East/West) Station Buildings BOT Project	91,101 m²	54 years	2009.3.10		
Signed Contract	Taipei Main Station Special Zone T9 BOT Project	261,157 m² (TRA ownership 54.77%)	50 years	2004.12.27		
	Songshan Station Multipurpose Building and Multistory Parking BOT Project	25,564 m²	52 years	2007.5.15		
	Nangang Station Building BOT Project	42,610 m²	50 years	2006.12.11		
		Development	Franchise			
Project	Taichung Station Railway Culture Park BOT Project	Area 29,672 m²	Period 50 years			
under Planning	Changhua Roundhouse Peripheral Area ROT Project	18,874 m²	15 years			

	Urban Renewal Projects (Under բ	planning by governments)	
			Contract
		Site Area	Execution Date
	Nangang Marshalling Yard	54,405 m² (TRA ownership	2015.4.2
Signed	Urban Renewal Project	94.69%)	2013.4.2
Contracts	Hsinchu Station Rear Section	57,607 m² (TRA ownership	2014.2.26
	Urban Renewal Project	78.29%)	2014.2.20
	Kashung Ctation Libera Dangual Design	41,526 m² (TRA ownership	
	Keelung Station Urban Renewal Project	31.83%)	
	Taipei Main Station Special Zoning E1 and	27,551 m² (TRA ownership	
	E2 Urban Renewal Project	91.47%)	
	Olever () (level to be a proper of Decision	19,831 m² (TRA ownership	
	Star of Yilan Urban Renewal Project	97.82%)	
Projects	Changhua Station Northern Section Urban	10,181 m² (TRA ownership	
under	Renewal Project	48.28%)	
	Yuanlin Station Peripheral Area Urban	31,766 m² (TRA ownership	
Planning	Renewal Project	41.33%)	
	Kashaiyna Station Fact Old darmitany Area	27,745 m²	
	Kaohsiung Station East Old dormitory Area	(TRA ownership:	
	Urban Renewal Project	98.62%)	
	Kaohsiung Port Station (renewal units 2, 3,	89,374 m²	
		(TRA ownership: 86.01	
	4) Urban Renewal Re-development Project	%)	



Taipei E1E2 urban renewal project planning layout



Kaohsiung Station east urban renewal project — 3D simulation

	Creation of Superf	ncies		
		Site Area	Franchise Period	Contract Execution Date
	Superficies in Baoqing Section, Songshan District, Taipei City	1,601 m²	70 year	2014.1.10
Ciava a d	Superficies in Fuhe Section, Zhongzheng District, Taipei City	670 m²	70 year	2015.12.28
Signed Contracts	International Tourism Hotel Construction Project in Banqiao Station Special Zone II	2,653 m²	50 year	2010.8.23
	Superficies on Jingxiu Road, Yuanlin Township, Changhua County	761 m²	50 year	2013.7.18
	Superficies of the dormitory on Hangzhou North Road	1,806 m²	50 year	
	Superficies of the dormitory on Andong Street	12,029 m²	50 year	
Projects	Superficies of the dormitory on Lishui Street	2,425 m²	50 year	
under Planning	Superficies in commercial area of Yucheng Section, Nangang District, Taipei City	1,774 m²	50 year	
	Superficies of Shulin dormitory, New Taipei City	10,127 m²	50 year	
	Hualien 6th Re-development Hotel Zone BOT Project	24,876 m²	50 year	

III. Asset Revitalization

(1) Station mall development

According to the "Act for Promotion of Private Participation in Infrastructure Projects", we revitalize our assets to attract abundant capital and creativity from the private sector, in order to turn stations into regional business centers, places for comprehensive transport and travel services, and perfect spots for fusing culture and gathering business opportunities. Based on macro environment changes and appropriate amendments of laws and regulations, we adjust our business strategy, diversify our development, and expand market to increase the revenue of affiliated business. By the end of 2017, five projects, including Taipei Main Station, Bangiao Station, Xinzuoying Station, Nangang Station Mall, and Bangiao Station underground parking garage, started operations to bring in royalties amounting to over NT\$304.34 million. The new and reconstructed station in recent years, among them, Xinwuri, Pingtung and Chaozhou stations had successively solicited investment through open selection. It is expected to increase annual revenue around NT\$ 17,000,000. The investment solicitation is continued at remaining stations such as Keelung, Qidu and Yuanlin and so on. It is expected to introduce quality suppliers providing good travel and transportation services and increase the revenue as well. Meanwhile, for its 130th anniversary, TRA and mall partners worked together to host the "TRA summer/winter gourmet food festival for 130th anniversary". In addition, we painted train cars for the 130th anniversary celebration. This act also gave the general public much surprise and fresh experience.



Nangang Station Universal Shopping Mall



TRA 130th Summer Gourment Food Festival

(2) Transforming warehouses and cultural assets into cultural and creative tourism attractions

To develop and vitalize TRA assets, the old warehouses were rented. Meanwhile, to effectively maintain, manage, and use cultural assets (monuments, historical buildings, old buildings) under TRA management, we cooperate with local governments to renovate them into exhibition areas for art creations and new cultural landmarks for citizens to enjoy. In 2017, we leased 116 premises for rental revenue which was amounted to over NT\$65.47 million.

(3) Property lease

We have checked out all the real property around each station along the line to diversify the operations, development, and uses of idle space, station buildings, housing, offices, land, and parking lot along the railway without conflicting with their intended uses through integral planning. The east and west underground parking lots of Taipei Main Station were oringinally operated via OT, which has been changed to ordinary public leasing tender upon the expiration of OT contract in April 2017. It is now managed via BOT selection in phases and the parking lot on the west side of Taipei Main Station is also included in the scope of premise. The tenders of the preceding areas were awarded successfully in Q2 2017, while the tenders for underground parking lot and taxi queueing area of Nangang Station were also awarded smoothly in Q4 2017. They will be handed over to tender winners for operation. As of the end of 2017, we have leased 669 premises and lots of land and 135 parking lots at a rent income of over NT\$842.70 million.



Figure 2: leased Taichung warehouse No. 20



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Figure 3 · 4: Underground parking lot of Taipei Main Station

Plane advertisement on both sides of arm rail

(4) Lease of station and train advertising space

Without obstructing station and train order, train safety, and building structure, we carefully plan advertising space for lease. Train advertising space includes space for posters in the saloon and the train body. Station advertising space includes space for posters, lamp boxes, windows, and multimedia ads. The adverstising is oriented to fuse advertisements with the station design as we consider both the sense of beauty and quality.

To cooperate with the operation of Taoyuan Airport MRT, the underground path between Taipei Main Station and Taoyuan Airport MRT A1 Taipei Station Stop has been linked. There are plenty of commercial opportunities and the commercial space is already delivered to the agent for leasing. The overall commercial income was over NT\$115.7 million in 2017.



Hallway lamp-box advertisement



(5) Photography and filming site lease

To support the promotion policy for the creative and cultural industry, improve TRA image and revitalize TRA assets, we produced a catalogue of photography and filming sites for drama, filming, documentary, and advertising in a hope to raise the intention of business owners to lease suitable TRA sites. In 2017, we accepted 41 applications, creating a rental income of over NT\$2.75 million.

(6) Lease of space for base stations

To facilitate transport and travel, improve telecommunications quality, and support the government's liberalization of telecommunications policy, we actively build base stations along the railway and allow telecommunications operators to set up base stations in TRA stations, real property, and land, provided that they will not affect train safety and communication quality. In 2017, we earned an income from rent of about NT\$20.47 million.

(7) Lease of solar photovoltaic equipment

To cooperate with "2-year solar photovoltaic promotion plan" approved by the Executive Yuan, the roofs of public buildings are available for the installation of solar photovoltaic equipment. With assessment, current condition of the "Chaozhou train base" is more appropriate site. The tender to lease solar photovoltaic equipment on such a site was awarded smoothly in Q3 2017 and the contract was concluded on October 6, 2017. It could bring a revenue of about NT\$3.36 million per year. We continuously seek for

appropriate sites for the solar photovoltaic power generation to drive the development of emerging green industry.

(8) Field optimization, creation upgrade

The multipurpose performance area of Taipei Main Station is solely managed by the TRA. The 2016 revenue was around 5.25 million. With solicitation effort, the 2017 revenue was around 10 million. To allow the content of performance in that area to be more diversified, it is planned to open the tender for collective management and operation from 2018. The plan is focused on field optimization and creation upgrade. The tender was awarded in Q3 2017 and the contract was notarized in Q4 2017. In the future, TRA may have revenue about NT\$ 18 million a year.

IV.Operation Management

(1) Continuous promotion of Operational Performance Accountability

1 Establishing an operational accountability system to appraise financial improvements

To fairly assess the operational accountability of an operator, we classify losses into attributable losses and nonattributable losses as instructed by the Ministry

of Transportation and Communications (MOTC). Attributable losses include normal losses (e.g losses from service-based routes and small stations), while non-attributable losses include losses not attributable to the current operator, such as the "pension fund under the old system", "interest of liabilities". Based on the assessment results, the MOTC requests TRA to plan and implement measures to cultivate income sources and cut unnecessary expenses and establish an operational accountability system to assess results of financial improvements.

2 \ Achievements

Achievements have been seen since the implementation of various improvement measures in recent years. The daily income of passenger transport has increased annually from NT\$39.89 million in 2007 to NT\$49.68 million in 2017, with a growth rate of 24.5%. In addition, daily ridership increased from 465,000 persons in 2007 to 638,000 persons in 2017, with a growth rate of 37.2%. However, due to the effects of increasing operational bonus for personnel expenses (such as proficiency payment and danger allowance), depreciation and land value taxes, TRA had a loss of NT\$1.54 billion (preliminarily audited) in 2017, an increased by NT\$610 million as compared to the loss NT\$930 million (final audited) in 2016.

(2) Organizing surveys in accordance with latest market trend to carry out the "Customer First" concept

The 2017 "TRA passengers intent survey" was conducted to understand the views of passengers to various service measures, including their satisfaction level and suggestion to TRA. The overall satisfaction scores are used as reference for the improvement of operational performance and overall service quality of TRA.

V. Procurement

(1) Statistics on procurement projects

In 2017, we implemented 751 procurement projects with a total sum of over NT\$10.95632 billion, including 319 engineering service procurement projects, 266 labor service procurement projects, and 166 property procurement projects. The procurement included such track maintenance trains as railway engineering maintenance trains, improved engineering maintenance trains, and catenary working trains; 600 set of PC switch sleepers, 55,500m 60E1 steel rails route maintenance materials; reconstruction of the ticket integration systems, ticket workstations and magnetic ticket machine procurement; additional Qidu-Badu crossover line connection system modification and installation under the Train Operation Safety Improvement 6-Year Plan, Nupu Creek reconstruction projects; the land arrangement and cooperative engineering for the moving of Kaohsiung Workshop to Chaozhou, fiber optics construction for remote crossing monitoring, TRA Generation 2 bridge management system construction, maintenance and bridge tunnel inspection and inferior component repair design and technical service projects.

(2) Revising procurement regulations to improve procurement effectiveness

1 Procurement review team revised the related procedures to ensure procurement quality

To cope with "Outlines for the Adoption of Most Advantageous Tender Award of Large Construction

Procured by Governmental Agency", "Outlines for the Establishment and Operations of Governmental Procurement Review Team" promulgated by Public Construction Committee, the revision of "large construction procurement review team" and "example of property, labor procurement review team operational procedures and countersign documents" of TRA were issued via letter on February 8, 2017 to avoid operation omission and ensure the procurement quality.

2 Revising "Procurement Project Appraiser Selection Regulations" to satisfy the actual needs of operation

To meet the actual preparations of all units for handling most advantegous tender countersign procedures, the revision of article 3 of "Procurement Project Appraiser Selection Regulations" was promulgated via letter on October 6, 2017 to specify the time, process and measures of selecting procurement appraisers (reviewers), allowing the appraiser work to be more complete.

3 Revising the regulations regarding material disassembly and collection to improve management efficiency

The revision of "Notices for TRA material Disassembly and Collection Management" and "WIP Matreials/ Material Disassembly and Collection/Self-purchase Material Control Procedures" was completed and promulgated on March 10, 2017. In addition to reinforcing the material disassembly and collection control and audit, the examplary forms regarding managements of material disassembly and collection were established to facilitate practical operations.

4 Revising waste material processing regulations to accelerate waste material management and processing efficiency

To expand the scope of waste material tender on site and to save transportation cost, the revision of "TRA Waste Materials On-Site Tendering Procedurs" and related forms were completed and promulgated via letter on October 26,

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2017. Meanwhile, to comply with government environmental policies, the "TRA Waste Oil On Site Tendering Procedures" was ceased.

(3) Organizing on-the-job training to strengthen professional competencies

1 · We organized four sessions of TRA professional purchaser fundamental training on procurement in May and October 2017. A total of 93 trainees were trained in 2 sessions, studying related laws and regulations to improve their professional competencies.

- 2 \ We organized 2 sessions of refreshment training for 92 professional purchasers in October 2017. The external lecturers were invited to deliver lectures regarding engineering, service and property management, aiming at on-site practices to reinforce acceptance management and dispute handling skills and prevent mistakes so as to improve the practical handling competencies of purchasers.
- 3 \ We organized 4 procurement operation seminars by region for a total of 203 attendees. The seminars focused on notices for the engineering and service procurement tenders and contract writing so as to familiarize with the procurement operations of all the major procurement projects of TRA. (Figure 1~2)
- 4 \ There were 4 material management seminars held at northern, central, southern and easten regions in June and July 2017. A total of 208 material control personnel participated to enhance their own knowledge of material management and exchange the difficulties in practice encountered and provide resolution as appropriate. (figure 3~6)

Figure 1.
2017 procurement seminar
(central)

Figure 2. 2017 procurement seminar (north)









Figure 3/4.
2017 procurement seminar
(Kaohsiung)



Figure 5. 2017 material management seminar (Changhua)



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Figure 6. 2017 material management seminar (Hualien)



(1) On-the-job training

- 1. July 19, 2017— "environmental revolution dining table of tomorrow" video appreciation
- 2. August 3, 2017 core competence lecture— "services and current major governmental policies long-term care of hyper-aged society"
- 3. September 20, 2017 environmental education— "Wall-E" movie appreciation
- 4. October 12, 2017 physical and mental health lecture— "pressure adaptation and relaxation technique" video appreciation
- 5. November 28, 2017 multi-ethic lecture- "Freedom Writers" movie appreciation



Figure 1:
Diet revolution- dining table of tomorrow video appreciation



the keynote speech by professor Chen, Liang-Kung from the Aging and Health Research Center of National Yang Ming University



Figure 3: Wall-E movie appreciation



Figure 4: the keynote speech by United Psycological Service CEO Chen, Kai-Ting



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Freedom Writers movie appreciation

(2) Law education

- March 23, 2017 human right education "Mandela Long Walk to Freedom" and second international review meeting of two conventions & promotional video of second national report
- 2. April 20, 2017 gender mainstreaming "My Life in Pink" movie appreciation
- 3. April 26, 2017 UN anti-corruption convention "Z Storm" movie appreciation
- 4. May 24, 2017 national defense education for all people- discussing the importance of national security maintenance and national defense for all people from modern history of terrorism development
- 5. August 22, 2017 keynote speech— "courage to serve, rule of law intent to profit and convenient service"

Figure 1: Mandela-long walk to freedom movie appreciation

Figure 2: second international review meeting of two conventions & promotional video of second national report









Figure 3:
My Life in Pink movie appreciation

Figure 4: Z Storm movie appreciation

Figure5:

the keynote speech by colonel military training instructor Wang, Pon-Cheng from National Defense University

Figure 6:

the keynote speech by Judge Cheng, Li-Yan from Taipei District Court





Book reading

June 16, 2017 — monthly book reading "The Silo Effect" coorganized by TRA and National Academy of Civil Service



The keynote speech by Dr. Song, Shih-Shiang from Innovative School of Sun Yat-Sen University

(4) 2017 model civil servants ceremony

The MOTC held the 2016 Model Civil Servants Ceremony at 2 p.m. on May 5, 2016 (Friday) in the assembly hall on the 5th floor of the MOTC. As the host of the ceremony, MOTC Minister Ho Chen, Dan commended 37 model civil servants. Director Chung, Ching-Ta (now serving as counsellor to MOTC), Section Chief Chen, Yu-Mo (now serving as deputy director of Transportation Department), Senior Engineer & Chief Hsieh, Kun-Cheng and Associate Engineer Wong, Hui-Ping were awarded.



Minister Ho Chen, Dan and model civil servants of TRA

(5) 2017 Director-General Cup **Table Tennis Competition**

To encourage employees to exercise, engage in proper leisure activities, and stimulate teamwork, we organized the 2017 "Director-General Cup" table tennis competition during June 21-22, 2017. There were 15 teams in the men's category and 13 teams in the women's category, with a total of 241 players. Through intense matchplay competitions, the men's champion was awarded to the Recreation Team of Changhu, followed by the second-place Recreation Team of Kaohsiung Workshop, the third-place Recreation Team of Hualien and the fourth-place Recreation Team of Keelung. The women's champion team was the Red Team of TRA's Recreation Team, followed by the second-place White Team of TRA's Recreation Team, and the third-place Recreation Team of Taichung.



Speech by Director-General for the opening ceremony



Photo of players

(6) The 6th Session of Railway Cup Softball Competition

The 6th Railway Cup Softball Competition was organized on April 15, 2017 (Saturday). A total of 12 teams consisting of 300 persons participated in the competition. The TRA softball team players, cheerleading members and service personnel were honored with the championship for their demonstration of the best team spirit.



Participants and directorgeneral



Winning champion

(7) Parent–Child activities

To carry out the edutainment parent-child activities designed by the Executive Yuan, TRA asked all units to plan and manage their own activities before August 2017. Through different activities designed by all units, the participating employees and family members may experience parent-child interaction and further enhance parent-child relationship, promote family harmony. There were total 2076 participants with outstanding results.

Left: General Transport
Dispatcher Office organized
"2017 parent-child activities"

— visit Taipei Astronomical
Museum









Chiayi Construction Branch organized "2017 parent-child activities" — visit Dounan tamping train maintenance workshop, the tamping team explained the functions and features of engineering service and tamping train



Tainan Freight Service
Department organized
"2017 parent-child
activities — visit Hualien
Cultual Creative Industries
Park, enjoy the time of

VII. Training

(1) Duty and mission

In order to provide the public with safe and punctual rail transport service and diversify the scope of business, it is necessary for TRA to actively train different types of professional talents to ensure the sustainable operations and development of TRA. Therefore, the Employee Training Center centralizes core technology training and management knowledge training for on–the–job employees and orientation courses for new employees. To improve engineering quality and management performance, Public Construction Commission (PCC), Executive Yuan, accredited the Employee Training Center as a training institution to offer "Infrastructure

Project Quality Management Training" in 2009. This training program aims to equip TRA engineering personnel with new knowledge in quality management and project defect prevention, in order to improve the construction quality of infrastructure projects. PCC will issue a pass certificate to trainees who complete and pass the training. By the end of 2017, a total of 660 employees were trained, and 617 were qualified, with a passing rate at 93%.

(2) Number of courses in 2017

Note:

"Person-day" explanation

Individual training course person-day: The number of trainees of a course x the length of a course

Training category person-day: The number of trainees of all courses in each category x the sum of the length of all courses.

Annual total training manday: The number of trainees of all courses in a year x the sum of the length of all courses.

In 2017, the Employees' Training Center organized 141 courses for 7,346 persons over 67,151 person-days. Details are described as follows

1 Rail professional technology training

A total of 35 courses for 1,420 persons over 39,315 person-days were organized as follows:

Transport course, operation course, dispatcher course, on-duty trainmaster refresh courses, locomotive train operator course, driver course, train inspection course, work train driver course, work train commander course, engineering train commander course, civil construction practice course, route practice course, signaling technology elementary course, overhead line work train driver, overhead line work train commander, telecommunication technology elementary course,

electrical engineering supervisor course, electrical dispatch couse, risk management and malfunction analysis courses, electrical proficiency course etc.

2 · Management competency training

A total of 3 courses for 95 persons over 862 persondays were organized as follows: Infrastructure project quality management courses (civil construction courses and electrical and mechanical courses), national property management and revitalization courses, etc.

3 · Occupational safety and professional competency training

A total of 31 courses for 2,141 persons over 3,067 person-days were organized as follows: First-aid safety and health education and training course, onsite operational officer safety and health education training, category C OSH administrator training course, category A OSH administrator training course for construction industry, and category A OSH administrator training course, first- aid safety and health personnel on-the-job training, OSH business officer on-the-job training, OSH administrator on-the-job training etc.

4 Training for new employees recruited through special examination

In 2016 and 2017, we organized a total of 46 courses for 2,647 persons over 18,895 person–days: Basic training for new employees recruited from railway special examination (TRA training), professional skill training (department training), and field operation training (branch training).

5 · Promotion proficiency training

In 2017, there were 2 courses for promotion from basic to assistant level training, with 59 persons over 1,121 person-days.

6 Personnel affairs and anti-corruption professional competency training

Advanced labor law study for personnel officers, Webhr personnel subsystem study, 2017 civil ethic crossfield consensus camp and 2016 anti-corruption review meeting. We organized a total of 10 courses for 419 trainees over 278 person-days.

7 · Affiliated business operational competency training

We organized a total of two leasing and BOT project performance management courses for 86 persons over 258 person-days.

8 · Procurement professional competency training

We organized a total of four courses for 184 persons over 1,644 person-days: Basic purchaser training course and purchaser refresh training course.

9 \ E-learning training

We organized E-learning design and production workshop and TMX system educational training for 3 courses, 77 trainees over 139 person-days.

10 · Classroom lending training

In 2016, we organized a total of 5 courses for 218 persons over 1,572 person-days Classes as follows: railway construction seal and power shutdown application operator training and maintenance engineering train commander class for Railway Reconstruction Bureau.



Photo of 2017 assistant level upgrading course



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Photo of 41th session of attending driver courses



Photo of 8th session of attending train inspection courses

VIII.Occupational Safety

(1) Strengthening safety culture

We invite experts and scholars to organize the "Zero Hazard—Hazardous Activity Anticipation" training, and coorganized on-the-job education, training with inspection organizations and on-site occupational hazard case study, in order to strengthen the "safety culture and safety management" concept, effectively raise the awareness of industrial safety of employees, and ensure occupational safety.

1 \ In 2017, we organized the "Zero Hazard—Hazardous Activity Anticipation" for 258 employees in northern Taiwan (October 19 and November 2), central Taiwan (November 23), southern Taiwan (December 6), and eastern Taiwan (November 15).

2. In 2017, we organized one occupational disaster case propaganda for 54 employees.



"Zero Hazard—Hazardous Activity Anticipation" training



2017 Onsite occupational disaster case propaganda

(2) Promoting physical and mental health of employees

- 1 \ TRA Occupational Health Newsletter vol. 001-004
- 2 Nonthly on-site occupational safety and health consultation, in a total of 12 times and 2-10 person each time



TRA Occupational Health Newsletter vol. 001–004

(3) Reinforcing occupational safety and education and training

In 2016, we organized one course on category A occupational safety and health administrator training for 54 persons; two courses on category C occupational safety and health administrator training for 104 persons; one course on category A occupational health and safety administrator for the construction industry for 37 persons; three safety and health training courses for 119 on–site commanding officers to improve their occupational safety and health knowledge as to enforce self–management and self–inspection work.



3 first-aid personnel training sessions for 144 persons

(4) Continuous promotion of the occupational safety and health management system (TOSHMS/CNS15506 standard)

Carry out various occupational safety cross check, lead auditor-guided audit and assessment system; develop systematic management; effectively control the hazards of various facilities and the environment; strengthen TRA's safety culture; and promote the physical and mental health of employees. We have completed the re-inspection of 23 units, and completed the follow-up inspection of 12 units in 2017.

(5) Promotion of the construction projects in progress safety and health

Aiming at significant construction projects in progress (over NT\$50 million), we implemented one safety and health operation audit once every month, and in a total of 54 times. The team is organized by the labor safety chief of Construction Section, labor safety chief of Electrical Affairs Unit and occupational safety and health personnel of Labor Safety Office. In 2017, the major construction projects in progress included: construction of daily inspection depot of Hualien Mechanical Affairs Section, Ditch Remodeling Construction of Jiji Line, Anti-collapse construction for Sandiaoling, Yilan half standard gauge tunnel remodeling, the addition of two refuge tracks in Wuta Station, Neiwan Branch Line improvement (Zhuzhong — Neiwan)

IX.Disaster prevention preparedness

As vigorous global climate change, natural disasters such as earthquakes, typhoons, torrential rain, and debris flows occur more frequently, potential disaster areas have been increasing across Taiwan. In addition, railways are part of public transport, if it becomes a target of terrorist attacks, the public will certainly panic, and this will become a serious threat to public transport safety. Besides, it may be more extreme in the future and a thorough review and revision are required for the out-dated concept, strategy, and practice for disaster prevention. Therefore, it is necessary to achieve the goal of "plan for the worst, do the best, check in advance, and act ubiquitously" based on the strategy and practice featuring "prevention is better than cure and keep disasters away". Meanwhile, it is necessary to adjust the pace of prevention and rescue based on the severity of disasters. All units should assess and analyze the scenarios of different types of disasters and take precautionary actions and countermeasures in ordinary time. When an unexpected disaster occurs, it is hoped that drills and responsive measures implemented and planned in ordinary time can help TRA to minimize the damage and to recover normal service as quickly as possible.

(1) Rail safety drills—mobilization, disaster prevention, and counterterrorism

In 2017, five TRA joint mobilization offices (regional brigade) and Alishan Forest Railway Management Department conducted large-scale integrated live drills with 943

employees on the emergency response to and rescue (recovery) of different types of railway disasters. Among them, Taipei joint mobilization office (regional brigade) worked together with "2017 National Major Infrastructure Facility Banquio Union Station Protection Drill". 943 employees were mobilized in the above–mentioned 6 drills. On July 27, 2017, Construction Maintenance Headquarters conducted the "TRA Building Disaster Prevention Drill", a live evacuation and disaster prevention drill involving 378 employees on the areas above the 3rd floor. The total participants above were 1,321 persons, including external supporting units, in a total of 1,711 persons.

No.	Unit	Date	Drill Location
1	Construction Maintenance Headquarters	2017.07.27	TRA Building
2	Taipei Mobilization Office	2017.07.20	Banquio Station
3	Taichung Mobilization Office	2017.06.23	Miaoli Station
4	Kaohsiung Mobilization Office	2017.04.25	Gangshan Station
5	Yilan Mobilization Office	2017.05.23	Yilan Station
6	Hualien Mobilization Office	2017.05.18	Hualien Station
7	Alishan Forest Railway Headquarters	2017.05.12	Beimen Station

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The drill of Hualien Mobilization Office on May 18, 2017







The drill of Yilan Mobilization Office on May 23 201







The drill of Kaohsiung Mobilization Office on April 25, 2017







The drill of Alishan Forest Railway on May 12, 2017







The drill of Construction Maintenance Headquarters on July 27, 20°







The drill of Taichung Mobilization Office on June 23, 2017

(2) Flood preparedness

"Personal safety, train safety, and railroad safety" are the principles of TRA for flood prevention. Since the onset of the flood season in March, all response teams have undergone disaster prevention awareness education, and thoroughly checked all equipment in accordance with the "Flood Check Record". In addition, these response teams conducted "flood drills" in accordance with the established Flood Drill Plan. In April, response teams formed a "spot check task force" to supervise the flood preparation of all response teams. The transportation, construction, mechanical engineering, electrical engineering, and special defense groups of TRA Headquarters formed the "joint supervision task force" to supervise and evaluate the flood preparedness of all response teams. Currently, we have completed the customization of the Quantitative Precipitation Estimation and Segregation Using Multiple Sensor (QPESUMS) and promoted it to all response centers. With this system, the Central Weather Bureau (CWB) will provide us with real-time quantitative precipitation estimates of all rainfall monitoring points in important sections, bridges, construction maintenance sections every 10 minutes. These estimates thus provide us with a reference for alerting or taking action to the water level and rain volume of all monitoring points and customized disaster prevention decision support system. In every quarter, the Construction Maintenance Division gathers the information submitted by individual construction branches and submits it to the CWB to make ad-hoc corrections.



Figure 2: Ditch deposition and foreign objects removal



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Figure 3: Heavy engineering machine used in the drill



Figure 5: Flood preparedness supervision meeting











(3) Auxiliary Military Service Corps training

To enhance the skills of military service corps and the rescue ability for emergency railroad repair during wartime, TRA organized the "Auxiliary Military Service Corps" training based on the "Guidelines for the Assembly and Training of Annual Auxiliary Military Service Corps" together with Reserve Command of Ministry of National Defense. Two independent regional corps with 67 members participated in the training.

1.On October 16, 2017, the 2017 assembly and training of Auxiliary Military Service Corps (No. Z941101) was held in Construction Maintenance Headquarters.

2.On October 20, 2017, the 2017 assembly and training of Auxiliary Military Service Corps (No. Z951102) was held in the Taitung Construction Branch.

Figure 1: The urgent repair class of Construction Maintenance Headquarters

Figure 2: The Construction Maintenance Headquarters demonstrate the steel rack bonding and transport drill





Figure 3:
The draftees of Construction
Maintenance Headquarters
in steel rack bonding and
transport drill

Figure 4:

The urgent repair class of Taitung Construction Section

Figure 5:

Taitung Construction Section demonstrate manual tamping and lining

Figure 6:

Taitung draftees of Construction Section demonstrate in manual tamping and lining training









(4) Routine training for civilian vigilance

Routine training for civilian vigilance enables civilians to improve their knowledge of civil defense, understand the need for civil defense as to prepare for disaster prevention and rescue, counterterrorism, self-defense and self-rescue, and all-out defense in ordinary time, to effectively support military duty in war, and to ensure homeland security. In 2017, TRA and Alishan Forest Railway organized seven routine trainings for civilian vigilance, with 499 participants. The 2017 training courses included: disaster prevention and rescue (1 hour), emergency medical rescue and AED (automatic external defibrillator) operation (1 hour), civil defense law and hazardous object identification and handling (1 hour), building fire inspection and application (1 hour)

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NO.	Unit	Training Date
1	Construction Maintenance Headquarters	2017.07.24
2	Taipei Mobilization Office	2017.06.15
3	Taichung Mobilization Office	2017.07.21
4	Kaohsiung Mobilization Office	2017.07.25
5	Yilan Mobilization Office	2017.06.16
6	Hualien Mobilization Office	2017.07.18
7	Alishan Forest Railway Headquarters	2017.07.15

Figure 1:
Basic knowledge and prevention of explosive objects

Figure 2:

Civil defense law and hazardous objects identification and handling practice

Figure 3:

Building fire inspection and application

Figure 4:

Civil defense law and hazardous objects identification and handling practice













Figure 5: Knowledge and prevention of explosive objects

Figure 6:

Emergency medical care and AED operation

(5) Preparedness for security incidents

Seeing that TRA is a public transportation network, it could be a target of security attacks, the public will panic, and

this will become a serious threat to public transport safety. Therefore, we take the following precautionary actions to prevent security incidents:

- Security workforce: Reinforce platform and train patrol, raise access control at boarding entrance, establish a security reporting system with shops in co-constructed or union stations, and establish a joint defense system with local military, police, and fire departments, local counties and cities, and healthcare systems.
- 2. Security facilities: Increase monitoring equipment in station, emergency intercom in wagons, equip batons in the conductor's room, and anti-explosion blankets in stations.
- 3. Awareness education for the public: Remind passengers not to carry dangerous items on train and make it known to the public. Ask passengers to be aware of dangerous items and suspicious people, things, and events and remind them to immediately report to TRA station staff or the Railway Police (02–23115580) or call 110 through station and train broadcasters.

Figure 1: Install station monitoring

install station monitoring equipment to reinforce security system

Figure 2:

Railway police station reinforces the station patrol

Figure 3:

The marquee banner broadcast reminding passengers to watch out for dangerous items and suspicious people, things and events anytime

Figure 4:

Post emergency equipment location at obvious spot on train









Figure 5:
Install emergency call system inside the car

Figure 6:
Place emergency window breaking hammer inside the car





(6) Organize drills for national major infrastructure facilities– Banqiao Union Station

2017 national major infrastructure facility Banquio Union Station drill was held in accordance with 2017 "National Major Infrastructure Facility Protection Drill Implementation Plan" issued by Homeland Security Office of Executive Yuan via letter. The main purpose was to physically check the internal and external key assets and resources of Banquio Union Station, analyze and assess various disaster risks and effects, increase the protection power of major infrastructure facilities, verify the major infrastructure safety protection plan of Banqiao Union Station, explore potential problems of risk management and supervise for the improvement and fulfillment. It is to advance emergency command and coordinate the essentials through drill to enhance the protection power of major infrastructure facilities.

The main target was to verify the fitness of current disaster prevention and anti-terrorist plan and mechanism and to explore various reporting, emergency response and protection power or other issues regarding organization, training through relevant scenario inference to reinforce the sustainable operation and disaster resistance of Banqiao as well as shorten the disaster recovery time.

The drill took place at Banqiao Union Station to review current disaster risks. TRA, THSR, Taipei MRT, all stores at station and FSC, national security, ploice department, military,

AEC and MOHW units implemented task forces organization and division and implemented emergency disaster responses via "military simulation" and "hands—on drill" to reinforce prevention preparedness in ordinary time and rescue mobilization for disaster, logistic support, response decisions and recovery ability. Furthermore, the drill of "Significant Transportation Facility Human Dangerous Security Event" of MOCT was organized to verify and reinforce the coordination among teams (departments), centralize the emergency response ability and cooperation management.

The drill was to reinforce the railway transportation safety during the World University Games in August 2017. To ensure the coordination, contact channel for human disaster rescue at union station, the drill was organized aiming at the violent attack and hostage taking in selected train, gun strafing of scoundrel at train waiting platform, explosive objects placed at the station, the dirty bomb at Banqiao Station Office Builing and information security situations. Mobilized were 308 persons, 15 vehicles and 2 police dogs. This vivid and hand-on practice received "Outstanding" award and the Deputy Director-General of TRA Ho, Hsien-Lin accepted the award at the Executive Yuan.



Figure 1 : Military simulation



Figure 2:
Actual drill at command office





Figure 4:

The drill of gun strafing of scoundrel at train waiting platform









Figure 6:

Figure 5:

The drill of Radiation

Atomic Energy Council for radioactive object detection

Response Team of



The inspirational speech by minister without portfolio Wu, Hong-Mo to drill force

Figure 8:

The drill was honored an "outstanding" award, and the Deupty Director-General of TRA Ho, Hsien-Lin accepted the award at Executive Yuan





X. Ethics

(1) Social participation

1. Root planting propaganda: 20 campus anti-corruption activities were planned from March to June 2017. The interative promotation was engaged through creative and sprightly activities to promote anti-corroption idea in campus, deepen the concept of incorrupt government in the mind of children and youths, with total 1,084 teachers and students participating in the activities.





Root planting propaganda _Taipei Jing Shin Kindergarten



Root planting propaganda_ Kaohsiung Zhong Cheng Elementary School



Root planting propaganda_ Hsinchu Hulin Elementary School 2. Agency feature propaganda: 12 series proganda programs were held in northern, central, southern and eastern Taiwan from October 2016 to August 2017. The anti-corruption information was promoted and the clean image of TRA was improved through such interactive games as Q & A quizs or questionnaire filling and lottery drawing with general public and employees' family members. There were total 1,666 participants.



Agency feature propaganda _Yilan Tranport Section anti-corruption killer game



Agency feature propaganda
_Taichung
Transport Section anticorruption pinball game

3. Publish the achievements of various social involved anti-corruption propaganda on "anti-corruption" and "TRA Anti-corruption Response" FB page at the time as appropriate and send them to the "TRA Newsletter" to reinforce the anti-corruption promotional efficiency through social network.

(2) Holding anti-corruption meetings

TRA held two anti-corruption meetings in 2017. Each meeting and the chairperson's remarks and assignments were sent to related units for management and evaluation. TRA also followed up the assignments given by the chairperson. In addition, TRA supervised 43 branch units to hold anti-corruption meetings in seven regional groups, and 8 regional anti-corruption meetings were held and registered in the anti-corruption management system in 2016. The Ethics Office also gathered the outcomes of the anti-corruption meetings at the end of the year for reporting.



Director-General Lu, Chieh-Shen hosted the 2017 Anti-Corruption Meeting on September 26, 2017

(3) Anti-corruption education and training

To reinforce the legal knowledge and law compliance, understand legal regulations and develop the courage to serve by employees of TRA and subordinate organizations, we invited the judges, prosecutors or lawyers to address how to "Promote Rule of Law Education to Base Units". based on the theme of "Abuse of Public Power for Private Profit". A total of 1,325 employees participated in the 10 events.





Civilian service governance propaganda on "Abuse of Public Power for Private Profit"

To cultivate the anti-corruption concept and legal culture for newly recruited employees to facilitate their execution of duties, to form the code of conduct for engaging public affairs as well as to deepen the awareness of anti-corruption and honesty to further establish a righteous and efficient anti-corruption government, 28 "laws and discipline for new civil servants" courses were held. A total of 1,597 newly recruited personnel attended the traning programs.

(4) Project audit

TRA conducted 2017 "arm rail, elevator maintenance procurement" project audit to inspect overall maintenance of elevation equipment for the defect exploration, review and improvement and reduction of risk factors. The "anticorruption guides for elevation equipment maintenance procurement" was compiled after relevant results and experiences were reviewed and improved. It is to guide elevation equipment user and management unit to conduct self-review and comply with the laws before and during the procurement process, contract performance management, onsite maintenance so as to assure the quality and user safety. Meanwhile, TRA invited such experts and scholars as chief secretary Tseng, Chao-Kai of Agency Against Corruption, prosecutor Hsu, Yong-Chin of Taiwan High Court Administrators Office, CEO Liao, Hsin-Zhong of non-governmental organization Taiwan Transparency

Organization, lawyer Huang, Chao-Jen of Wen Tao Law Firm to give speeches at the "business integrity promotion" and "procurement revolution" seminars to which mechanical and electrical equipment suppliers of TRA were invited to attend. It is hoped that suppliers may stay alert, insist on honest operation, exercise due care of social responsibilities to fully achieve "alert" function, decrease the violation and indirectly reduce civil complaints, strive for public welfare, fulfill the expectation of people to an anti-corruption government, and allow public construction to be more satisfactory to public expectations.





Figures 1 · 2 : onsite project audit





Figures 3 \ 4 : project audit meeting



I.Train Operation Safety Improvement SixYear Plan (2015– 2022)

(1) Project contents

This project was implemented with the Executive Yuan's approval with Letter Yuan-Tai-Jiao-Zi No. 1030058414 issued on 14 October 2014, a total budget of NT\$ 27.522 billion, and a project period from January 1, 2015 to December 31, 2022. Its major contents include:

- 1. Level crossing improvement: Implementing grade separation of the following three level crossings: Nanhe, Jiannong, and Taimali.
- 2. Fencing and acoustic barrier installation in dangerous sections: Building 175 km of fencing and acoustic barriers.
- 3. Bridge alterations and reinforcements in accordance with current legal requirements: Altering 15 bridges, such as the Wencuobu River Bridge.
- 4. Creation of an earth slide/debris flow and strong wind warning system: Enhancing slope area, subgrade, and drainage facilities in high-risk areas along the TRA lines, as well as establishing a slope area disaster warning system.
- 5. Station facility renewal as required by law: Elevating all platforms along the TRA lines and enhancing the accessibility facilities and safety facilities in both men's and women's restrooms.

Rail facility renewal: Replacing 250 km of 50 kg steel rail,
 km of 50 kg head hardened rail, and 600 sets of 50 kg
 switch sLipers.

(2) Project outcomes

- An accumulated 78,784 m of fencing in dangerous areas was completely installed as of the end of November 2017 in order to reduce casualties and train delays due to the public crossing railroads for convenience.
- 2. Platforms in such stations as Nanshi, Tungluo, and Taian were elevated to be level with the trains in order to reduce accidents and shorten passengers' time for getting on and off the train.
- 3. The remodeling of Taipei Main Station (phase 1) was completed on August 8, 2017 to improve service quality for TRA passengers.
- 4. Improvements to the Qidu and Badu crossover were completed on November 30, 2017. Qidu Station is the base for trains departing from the western line heading south, while Shulin Station is the base fort trains departing from the eastern line. Shulin to Qidu is the overlapping route for all trains of eastern and western lines. In consideration of both of the transportation of eastern and western lines and relieving bottleneck areas, two crossovers between Qidu and Badu had been planned.



Fence at Gian, Hualien (K2+800)



Fence between Gian and Chishuei (K5+500)



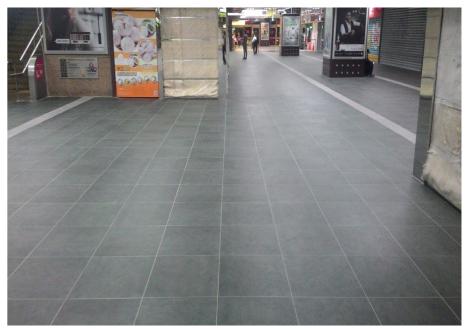
Elevated platform at Nanshi Station



Elevated platform at Tungluo Station



The B1 floor of the corridor



The first floor lobby floor



Crossover improvement between Qidu and Badu



Crossover improvement between Qidu and Badu

II.Other Constructions

Baifu Overhead Bridge Construction

Baifu Station is another station between Qidu-Wudu. The main construction is a three-level overhead station room with access on both the northern and southern sides. The station room features an overhead design that is also the overhead pedestrian bridge for citizens of Changan Community to cross the railway tracks.

To enhance the travel convenience and comfort of both Changan Community citizens and TRA passengers, the overhead bridge has been extended from exit 3 of Baifu Station to the corridor on the second floor of the Changan Village assembly hall, thus providing the people living in that area and TRA passengers better quality services.

The movement line of Baifu Overhead Bridge is located at the southern side of exit 3 of Baifu Station. The bridge's pier is located between the existing reinforcing piles and a private parking lot. To avoid concerns related to invading private land and damaging existing piles, a single pile base bearing steel pillar of a single overhead bridge on a single large drilled pile was used. Such a basic form can efficiently reduce the soil exploration volume, breakthrough restrictions on terrain and ground objects, and handle various concerns related to illumination, landscaping, safety, and convenience.





Baifu Overhead Bridge

III.Construction & Maintenance Projects

Within the 2017 full-line route improvement project, the Construction Department replaced 36,825 sLipers and 219,453 m of rail and refilled 22,376 m3 (approx. 179.1km) of ballasts and 166 turnout sets.

IV.Electrical Engineering Maintenance Projects

Baifu Overhead Bridge

(1) Signaling facilities

Level-crossing dual-taping equipment: install dual-function video monitoring and storage equipment at 350 level crossings across the island and add cameras to cover the original blind spots of the monitors in order to improve the protective safety of level crossings, prevent material accidents, and capture the operation status of monitoring equipment.

(2) Electrical communication system

- 1. To improve the poor signal coverage of the wireless mobile radio system, relay equipment was installed at the five spots of Sandiaojiao, Touchengbei, Gungliaonan, Tungshiaobei, and Taichung Harbor Branch to improve the wireless communication coverage rate.
- 2. A total of 751 sets of wireless handheld train dispatch mobile devices (model: MTP-3150) that were originally distributed by TRA in 2006 were replaced in 2017 to ensure train operations and the safety of onsite maintenance personnel.
- 3. The 96-core fiber optic cable installation project (first round): More than 16 years have passed since completing the existing fiber optic cable along the railway in 1999. The quality of the fiber optic cable has gradually declined. Therefore, the installation of a 96-core fiber optic cable was planned to simplify subsequent manpower and material resources and ensure the highly reliable survival rate of the backbone transmission system. In 2017, 300 km of fiber optic cable were installed, and 360 km are expected to be installed in 2018.

(3) Power system

1.Train Operation Safety Improvement 6–Year Plan – 95 mm² messenger wire replacement.

By replacing the original 49.5 mm² messenger wire with 95 mm², the flow capacity was increased by 33%, and the tension was increased by 25%. The material of the original messenger wire was cadmium copper, while the 95 mm² is hard-drawn copper, thus meeting the requirements of environmental protection.

2.Train Operation Safety Improvement 6-Year Plan – purchase of 17 OCS work trains and 11 railway maintenance trains.

Seventeen OCS work trains and 11 railway maintenance trains were purchased, and trains that had surpassed their economic life were replaced to reduce the train malfunction rate and increase construction sites to thus enhance maintenance efficiency and repair time.

V. New train procurement, renewal, and remodeling

(1) New train procurement

1. We purchased 16 tilting EMUs (model TEMU1000), for a current total of 64 tilting EMUs. All new tilting EMUs were delivered and put into operation by the end of February 2017.

- 2. We purchased 48 commuter EMUs (model EMU800), for a current total of 344 commuter EMUs. All new commuter EMUs were delivered and put into operation by the end of April 2017.
- (2) Number of locomotives, passenger trains, and freight trains

1.Powered locomotives: 285

(1) Electric locomotives: 86

(2) Push-pull (PP) electric locomotives: 64

(3) Diesel-electric locomotives: 92

(4) Diesel hydraulic locomotives: 16

2.Passenger trains: 2,373

(1) Tzu-Chiang Express EMUs: 285

(2) Tzu-Chiang PP trains: 381

(3) Commuter EMUs: 950

(4) Tzu-Chiang diesel trains: 165

(5) Diesel passenger trains: 46

(6) Air-conditioned passenger trains: 451

(7) Ordinary passenger trains: 44

(8) Others: 51

3. Freight trains: 1,691



A diesel-electric locomotive pulls Fushin Express carriages along the Duoliang-Taitung route

(3) Locomotive and carriage improvements

- 1. TRA contracted China Steel Machinery Corporation to handle a total of 41 items, such as stairless cars, which will be completed by the end of 2019.
- 2. The service optimization project for transit by train from HSR Zuoying Station to the Pingtung area was contracted out to China Steel Machinery Corporation. The tender was rewarded on December 15, 2017, and the project will be completed by the end of 2019.

VI.Special Projects

(1) Kaohsiung Workshop Relocation and Original Site Construction Project

In support of the "Kaohsiung Metropolitan Area Railway Underground Project", the purpose of this project is to relocate the Kaohsiung Workshop, Southern Region Supply Workshop, and Kaohsiung Port Maintenance Sub-Branch. to Chaozhou to maintain proper passenger and freight train maintenance and repair services, as well as the smooth repair and manufacturing of accessories and materials, ensure uninterrupted passenger and freight transport operations and train safety, fulfill EMU maintenance and repair following the underground project, and transform the new Chaozhou Base into the southern regional train maintenance and repair center, while the original evacuated land can be developed for urban planning purposes. The first revised plan was managed upon receiving consent letter Yuan-Tai-Chiao No. 1060016947 of the Executive Yuan on June 1, 2017. The

project's total budget was revised as NT\$ 13.4818 billion, and the schedule was adjusted from August 13, 2013 to December 31, 2021.

The primary contents of the project include:

- 1. Moving the Kaohsiung Workshop to Chaozhou.
- 2. Moving the Southern Region Supply Workshop to Chaozhou.
- 3. Relocating the Kaohsiung Port Maintenance Sub-Branch to Chaozhou.
- 4. Constructing a push-pull passenger train maintenance and repair workshop
- 5. Developing the original evacuated land for different urban planning needs.

After acquiring the land in September 2017, the "CL111 Tender Chaozhou Workshop Land Preparation and Associate Project" began on October 20 of that year. Meanwhile, the detailed design of the "CL121 Main Construction of Chaozhou Workshop (including the Southern Region Supply Workshop" and the "CL131 Repair Equipment Project" were completed by December. The contracting procedures for tenders of different constructions are continuously managed.



Simulation of the Chaozhou Workshop Project upon completion

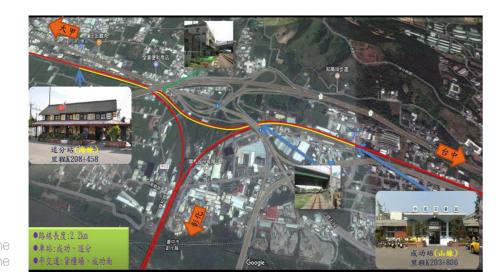
(2) TRA Double-track Construction Project from Chengkung to Zhueifen Station

The double-track project from Chengkung to Zhueifen will improve the bottleneck sections in the Taichung area caused by the current single-track operation from Chengkung to Zhueifen, thus providing quick, convenient, comfortable, and efficient track transportation services to people in the Greater Taichung area. The project's total budget became NT\$ 1.5405 billion with approval letter Yuan-Tai-Chiao No. 1050041701 of the Executive Yuan dated October 31, 2016, and the project period is from January 1, 2017 to December 31, 2020.

The project's primary contents include:

- 1. Increasing route capacity
- 2. Shortening train intervals
- 3. Satisfying the needs of commuter travel and achieving a MRT-oriented function
- 4. Improving bottleneck sections in the Taichung area

The project is divided into civil construction, tracks, telecommunications, signaling, and power such 5 items, and the subcontracts of each item were consecutively completed in 2017. "Matters regarding the commissioned planning, design, supervision, and land acquisition" started September 13, 2017; "power self-management" started June 30, 2017; "single self-management" started October 6, 2017; "communication cable and piping" started September 18, 2017; "train dispatch wireless mobile" started September 18, 2017; "civil construction-southern line" started November 20, 2017; "Chenkung maintenance gang house" started December 12, 2017; and "track construction" started December 14, 2017. The aforementioned items are expected to be successively completed by the end of 2018, and the double-track construction should be totally completed and operational by the end of 2020.



Bird's-eye view of the Chengkung Zueifen Line

(3) Completed projects

1. The Xinfu Station was opened on September 6, 2017.



2.The "Taipei Workshop Relocation Project — Fugang Base (CL321– 2 tender rolling stock branch phase 1 construction) and the subsequent TRA MRT project (CL321–1 tender EMU maintenance base and auxiliary construction) were completed on November 22, 2017.

VII Ticket System Integration and Re-Engineering Project

Future outlook of the newgeneration ticket system

- 1. Ticket booking optimization: Integrate the timetable search, ticket booking and payment process, ticket and seat booking, and seat selection services.
- 2. Smart ticketing system: Provide automatic seat booking to increase available seats for sale.
- 3. Cloud service: Dynamically adjust ticket system resources using virtual technology to correspond with the differences between peak and off hours, as well as the increased need for ticket booking during long holidays.
- 4. Revenue increase: Revenue management is implemented to support managers' decisions and increase TRA's overall revenue.
- 5. Reinforce hacking prevention: Prohibit ticket booking via software and control the pseudo needs of ticket booking.



Annex Chronology (Major Events 2017)

January				
1/3	Traffic distribution on the long New Year's holiday. To reduce traffic congestion during the five-day New Year's holiday from 30 December 2016 to 3 January 2017, TRA dispatched 210 additional trains and 457 carriages on all TRA lines in order to transport up to 3,653,009 passengers. The average daily operation volume was 730,602 passengers, 0.5% less than in the previous year. The total revenue of passenger transportation for that period was NT\$ 317,587,748, which was an average of NT\$ 63,517,550 per day, a 2% decrease from the previous year.			
The groundbreaking ceremony for the underground parking Wanhua Station. The Taipei City Government and TRA jointly organized the "consorting of the underground parking lot for the plaza in front of Station". Deputy major Charles Lin of Taipei City and Director Construction Division LI, Yong-Chang co-hosted the ground ceremony. Councilors Kuo, Chao-Yan; Yan, Sheng-Guan; Wu, C Ying, Shiao-Wei; Chou, Wei-Yo; Tung, Chung-Yan; Liu, Yao-Chung, Shiao-Ping of Taipei City Council and Deputy Chief Sof the Railway Reconstruction Bureau Wen, Dai-Shin were a to attend this great event. The underground parking lot's concorresponds with the operation of Wanhua Twin Tower, a new land relieves the traffic and parking of the public, meets the demands for transit passengers, and helps the local ecoprosperity.				
1/26	Premier Lin, Chuan inspected the New Year distribution conditions accompanied by Director General Lu, Chieh-Shen. Premier Lin, Chuan, accompanied by TRA Director General Lu, Chieh-Shen, inspected the New Year Distribution conditions on the eve of the lunar New Year.			

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February

Smooth traffic distribution during the Lunar New Year holiday.

To reduce traffic congestion during the Lunar New Year holiday from 27 January to 1 February 2017, TRA dispatched 384 additional trains and 1,516 carriages on all TRA lines in order to transport up to 6,123,800 passengers. The average daily operation volume was 680,422 passengers, which was 0.13% greater than in the previous year. The total revenue of passenger transportation was NT\$65,716,730, which was an average of NT\$ 67,301,460 per day and a 1.1% increase from the previous year.

TRA organized 10 major station business solicitation to vitalize assets and create new business opportunities.

In recent years, TRA has actively promoted developing the role of train stations from transportation and transit to compound malls with such diversified services as general merchandise, gourmet foods, and shopping. In order to revitalize assets and create new business opportunities of stations, the ten major station business solicitation conference was organized, including stations in the north (Keelung, Qidu), central (Xinwuri, Yuanlin), south (Pingtung, Chaozhou), and east (Luotung, Shincheng [Taroko], Yuli, Taitung). Furthermore, to promote travel service businesses in eastern Taiwan, tender information was simultaneously released. By doing so, it is hoped that enterprises may enthusiastically participate in eastern Taiwan. The expectation is to provide a variety of business services through private contributions and planned commercial activities incorporated with art and culture, to connect people with a beautiful life and shape different travel memories and touching moments.

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2/2

2/13

2/28

3/2

The signing ceremony for the land lease of the Taipei Workshop between the TRA and the Bureau of Cultural Heritage of the Ministry of Culture.

To stimulate the repair and reuse of Taiwan's national heritage, the Taipei Workshop, Ministry of Culture, and MOTC signed a memorandum of cooperation for the "Taipei Workshop Railway Museum" to accelerate works related to railway culture cooperation, as well conserve and revitalize cultural assets. Director-general of the Bureau of Cultural Heritage of the Ministry of Culture, Shih, Kuo-Long, and TRA Director-general Lu, Chieh-Shen both attended the signing ceremony for "the lease agreement for national land operated by TRA". Legislators Fe, Hong-Tai; Chen, Shuei-Sheng; and Wu, Si-Yao of the Legislative Yuan were also invited to attend the great event to continue railway culture, conserve cultural assets, and revitalize and reuse railway cultural assets. •

Smooth traffic distribution during the 228 long holiday.

To reduce traffic congestion during the 228 long holiday from 24 February to 28 February 2017, TRA dispatched 215 additional trains and 528 carriages on all TRA lines in order to transport up to 3,684,419 passengers. The average daily operation volume was 736,884 passengers, which was 0.08% greater than the previous year. The total revenue of passenger transportation was NT\$344,000,475, equal to an average of NT\$ 68,800,095 per day and an 11% increase from the previous year.

March

Minister Ho Chen, Dan of the MOTC attended TRA for inspection and seminar.

Minister Ho Chen, Dan of the MOTC attended TRA for inspection. Director-general Lu, Chieh-Shen led first-level managers to attend the seminar and exchange opinions.

Premier Lin, Chuan attended the groundbreaking ceremony for the Chiayi area railway underground project accompanied by Directorgeneral Lu, Chieh-Shen.

The groundbreaking ceremony for the Chiayi area railway underground project was hosted by Premier Lin, Chuan, and Minister Ho Chen, Dan of the MOTC, Director-general Lu, Chieh-Shen of the TRA, Director-general Hu, Shiang-Lin of the Railway Reconstruction Bureau, Legislator Li, Jun-Yi of the Legislative Yuan and Chiayi Mayor Twu, Shiing-jer were all invited to attend the ceremony.

The groundbreaking ceremony for the Nantainan Station Railway Underground Project attended by Director–general Lu, Chieh–Shen.

The groundbreaking ceremony for the Nantainan Station Railway Underground Project was co-hosted by Minister Ho Chen, Dan of the MOTC and Tainan Mayor William Lai Ching-Te. Director-general Lu, Chieh-Shen of the TRA led President Tu, Wei of the Railway Safety and Investigation Committee, Section Chief Chen, Wen-Chuan of the Kaohsiung Transportation Branch, Section Chief Liu, Hong-Shiang of the Construction Branch, and Section Chief Hsieh, Jung-Hui of the Electrical Engineering Branch in attending the ceremony.

To celebrate the anniversary of agreement with Japanese JR Shikoku, both parties organized a friendly stamp collection activity.

TRA and JR Shikoku of Japan signed an agreement of friendly cooperation in February 2016. Both parties maintain a friendly relationship and aim to deepen the exchanges between Taiwan and Shikoku Japan. To commemorate the anniversary of their agreement, TRA and Japan's JR Shikoku held the "TRA x JR Shikoku Friendly Stamp Collection Activity" from March 30 to October 13, 2017. Both Taiwan and Japan each selected 10 representative train stations for stamp collection. Stamp booklets were available to the public starting on March 30, 2017 at 10:00, with only 1,000 booklets (Japanese version) available at each station. The purpose of this promotional event was to attract tourists taking the train to travel Taiwan and Japan Shikoku while enjoying the fun of collecting stamps!

3/15

3/12

3/15

Activities for celebrating the anniversary of sister steam train CK124 and JR Hokkaido steam train.

3/25

To commemorate the fifth anniversary of the sister steam locomotive (SL) train agreement for TRA CK235 and JR Hokkaido C11 SL, TRA specially introduced the "2017 cruise-type train — one day spring train tour". The SL took passengers to appreciate a coastal view and wood station, as well as a special view of the mountain range.

TRA "services upgrade" makes Indonesia and Vietnamese language services available at nine stations.

3/28

3/31

To create a friendly and convenient waiting environment, the TRA organized a multi-language service upgrade ceremony hosted by Deputy Director-general Ho, Shien-Lin. Legislator Lin, Li-Chan of the Legislative Yuan was invited to the event. in order to provide service new immigrants and help foreign workers identify the train, as well as to create a friendly communication environment, such major stations as Taipei, Banqiao, Taoyuan, Chungli, Taichung, Changhua, Tainan, and Pingtung these 9 major stations were selected to provide broadcasting, consulting, and guidance. Those upgraded services were provided by staff who are fluent in the Indonesia or Vietnamese language.

Taichung Station's 100th anniversary celebration in 2017.

Taichung Station's 100th anniversary celebration was held at Old Taichung Station at 8:30 on March 31, 2017, presided over by Deputy Director Chung, Chin–Da. Legislators Hsu, Yong–Ming; Huang, Kuo–Shu; and Yan, Kuan–Hern were invited, among others. "Taichung Station" is a second–generation station with a late renaissance–style Baroque building that was completed on March 31, 1917. The main construction is a red brick building, with central gable, high tower, steep roof, high–ceiling lobby, and sophisticated statute and arch beam. For more than a hundred years, the station has been full of an artistic and cultural atmosphere, and people often stay just to appreciate it. It has become one of Taichung's famous landmarks. By incorporating local art and culture with local customs and features, it embodies the core value of TRA of "Connecting People, Driving Innovation," while also launching the new "Railway Track Elevation Start the First Year of an Era" of Taichung Station.

April The completion ceremony for the completion of hundred-year "Xinbeitou Station". The completion ceremony for the hundred-year "Xinbeitou Station" was held at Chishin Park in Xinbeitou. Taipei's deputy mayor, Chen, Jing-Jun, presided over the event, and Director-general Lu, Chieh-4/1 Shen represented the TRA in attending the opening ceremony. Xinbeitou Station is the one and only old station built during the Japanese colonial period. It is the origin of the name Xinbeitou and proof of the evolution of Beitou's geographical environment and movement. Smooth traffic distribution during the tomb sweeping holiday. To reduce traffic congestion during the six-day tomb sweeping holiday from 31 March to 5 April 2017, TRA dispatched 250 additional trains and 671 carriages on all TRA lines in order to transport up to 4,555,980 4/5 passengers, and the average daily operation volume was 759,330 passengers, which was 1.68% higher than the previous year. The total revenue of passenger transportation was NT\$428,032,944, which was an average of NT\$71,338,824 per day and a 1.54% decrease from the previous year. Director-general Lu, Chieh-Shen led a group to visit Japan to observe Japanese railway companies. Director-general Lu, Chieh-Shen led director Huang, Cheng-Chao of the Administration Department, Section Chief Chen, Yu-Mo of the Transportation Division to visit Tobu Railway Co., Keikyu Corporation, 4/11 Iwate Ken Government, IGR Iwate Galaxy Railway Company, Sanriku Railway, and Kintetsu Corporation with the hope of learning from the experiences of Japanese railways and promoting TRA transportation development through technological exchange.

5/1 Labor Day praise ceremony of 2017.

The 2017 5/1 Labor Day praise ceremony was held on the 5th floor of Auditorium. Director-general Lu, Chieh-Shen and President Chang, Wen-Cheng of Railway Union co-hosted the event. Director-general Lu, Chieh-Shen delivered the speech, expressing a restoration of the railway's core value and the primary train-working mission of "safety first." Legislator Chung, Chia-Bin was invited to attend the event, and 65 model workers were appraised and awarded certificates of merit distributed by Director-general Lu, Chieh-Shen and Legislator Chung, Chia-Bin.

Handover ceremony between Tobu Railway's Nikko SPACIA Golden Train and the Painted TRA Tzu Chiang Limited Express.

The handover ceremony between Tobu Railway's Nikko SPACIA Golden train and the painted TRA Tzu Chiang Express was held at the VIP Room of Taipei Main Station at 10:00 a.m., presided over by Deputy Directorgeneral Ho, Shien-Lin, while director Yutak Tsuzuki of Tobu Railway's Business Division led President Toshinari Kinoshita and managed Tomohiro Sumitani of the Taipei Branch to cooperate with the great event. Meanwhile, TRA celebrated its hundred-year railways of Taiwan and Japan for TRA's 130th anniversary. Anyone who posted TRA or Tobu Railway photos or articles on the message page as solicited by joining TRA Facebook page or sharing the article solicitation message and tagged two friends would be able to participate the activity and had the chance to win a "Tobu Nikko 4–day pass" or 130 "limited edition memorial bags for hundred–year double railway golden train activity."

The 2nd platform of Shanghua Station officially launched.

4/25

4/14

The 2nd platform of Shanghua Station, which started the construction on October 15, 2015, was finally completed for operation today after 18 months of construction. The platform extends the northern-bound Shalun train, which not only increases the capacity of the train route, but also facilitates passengers' transit and overall train function.

Director-general Lu, Chieh-Shen visited Mayor Lin, Chia-Lung of Taichung City Government.

4/25

4/26

Director-general Lu, Chieh-Shen led Director Yang, Cheng-De of the Planning Division and Section Chief Su, Chen-Lin of the Taichung Transportation Branch to visit Mayor Lin, Chia-Lung of Taichung City Government at 2:00 p.m. The purpose of the meeting was to negotiate matters related to the transfer of Taichung Station Railway Culture Park's operations and the elevated railway train in urban Taichung, as well as application for multi-purpose spaces under the overhead bridge and urban renewal planning for Taichung's core line.

TRA and THSR cooperate on the "Travel to Jiji by Two Rails" activity.

TRA and THSR jointly held the "Travel to Jiji by Two Rails" activity at THSR Changhua Station at 10:00 a.m. Deputy Minister Fan, Chih–Ku of the MOTC, Director–general Lu, Chieh–Shen of the TRA, and the Chairman Chiang, Yao–Zong of THSR hosted the event together. Deputy Mayor Chen, Cheng–Sheng of Nantou County, Deputy Mayor Lin, Ming–Yu of Changhua County, Mayor Chen, Gi–Hern of Jiji Township, CEO Cheng, Guang–Yuan of THSR, Chief Secretary Yang, Cheng–Jun of THSR, Director Hung, Wei–Hsin of the Sun Moon Lake National Scenic Administration and Chief Secretary Chu, Lai–Shun of the TRA all participated in the great event. The purpose of the two rails cooperation is to promote the convenient transit from THSR to TRA for domestic and foreign tourists. The "Tienchung–Chengchen one–day pass" was specially issued so that domestic and foreign tourists could appreciate the scenic spots along the line, which could promote the development of local tourism.

May

Wuta Station improvements under the "Six-Year Plan for Improving Railway Safety".

5/15

To implement the "Six-Year Plan for Improving Railway Safety", TRA has consecutively improved bottleneck sections of the north-link line to improve railway efficiency. Improvements at Wuta Station (civil construction and track) began construction today. The original two-side platforms were upgraded into two-island platforms. Furthermore, two additional sidetracks are being constructed to efficiently improve the capacity and punctuation rate between Nanauo-Hanben. Work is expected to be completed by the end of December 2018.

6/1

The Executive Yuan agreed to incorporate operation bonuses into profession allowance starting on June 1, 2017.

The Executive Yuan agreed to establish and revise all categories of personnel payroll via letter Yuan-Shou-Jen-Gi No. 10600462811 dated May 18, 2017. This decision includes operation bonuses in profession allowance and expansion of the hardship allowance scope. The name was revised to be the "MOTC TRA hardship allowance table for profession" and became effective on June 1, 2017. The "outlines for payment of MOTC TRA operation bonuses" were suspended for application the same day.

June

The exchange of train appearances between TRA 800 smile trains and Japan's JR Shikoku 8000 series trains were introduced to celebrate the anniversary of friendship between Taiwan and Japan.

TRA and JR Shikoku of Japan signed a "friendly railway agreement" in February 2016. To maintain a good relationship, both parties introduced a train appearance exchange on their anniversary. The TRA's painted model 800 smile train with the appearance of the JR Shikuko 8000 series served as the first passenger train driven on the western line from Keelung Station on June 2, 2017. Furthermore, both parties managed the friendship stamp collection activity for half a year, from March 30 to October 13, 2017 to promote railway travel of both parties and friendly relations between Taiwan and Shikoku Japan.

TRA's 130th anniversary celebration.

The TRA's 130th anniversary celebration was held at Performance Hall of Taipei Main Station. Director-general Lu, Chieh-Shen presided over the event, while Deputy Minister Wang, Kuo-Tsai of the MOTC gave a speech and distributed certificates of excellence to TRA employees. Meanwhile, Chief Hiroshisei Takahashi of the Economic Office of the Taiwan-Japan Exchange Association, Director Hsu, Hsu-Hsin of the Railway Police Bureau, Director-general Chou, Yong-Hui of the Tourism Bureau, MOTC, Deputy Director Chung, Ming-Shih of the Transporation Bureau of New Taipei City, Chairman Dong, Juei-Bin of Taipei Rapid Transit Corporation, Chairman Chiang, Yao-Zong of THSR, and chairman Wong, Wen-Chi of Chunghwa Post Co., Ltd., among others, as well as 46 representatives from the railway companies of JR East Japan, JR Shikoku, JR West Japan, Keihin Kyūkō Dentetsu, Seibu tetsudō, Tōbu tetsudō, Enoshima dentetsusen, Sanyō Denki Tetsudō Honsen, Isumi Tetsudō, Yuri Kogen Railway, Nagaragawa Railway, IGR Iwate Galaxy Railway and the Taiwan-Japan Exchange Association participated in the great event. The purpose of this conference was to create a new future of "TRA 130 Love TRA Forever" based on the core values of "safety, punctuality, service, and innovation". It is expected to develop quality "customer first" services and create a new TRA through the concentric cooperation of all. Furthermore, senior and outstanding personnel, friends of TRA, and outstanding volunteers were all praised at the conference.

Taipei Main Station revised time announcement and new convenient information for the public.

Taipei Main Station's lobby has provided a high resolution screen and other new technology since 2016, which has transformed the commercial screen from a static to a dynamic display to portray different visual and auditory messages to the public. The revision of the time announcement screen of Dudu Bell adopts the real operation of trains in Neiwan Station and the running painted train of TRA's 130th anniversary to present a brand–new image. Messages also include local weather information, the time, and emergency transportation information so that passengers can understand local weather and customs to facilitate travel convenience and promote TRA service quality.

6/10

6/9

6/15

6/17

Technology exchange seminar between TRA and RTRI.

To enhance the cooperation between TRA and RTRI and cultivate railway talents, the technical visit and exchange seminar was held in the TRA's Conference Room 1 on June 15 and 16, 2017. The Directorgeneral of TRA, Mr. Lu,Chieh—Shen, presided over the seminar, while representatives from the Department of Railways and Highways, Transportation Research, Railway Reconstruction Bureau, and Bureau of High Speed Rail, MOTC, the President of the International Development Department of Japan RTRI Toru Miyauchi, TRA Vice President Hsu, Hui—Yuan, and other leading executive officers were invited to attend the event. The topics of this seminar included centenary, track system, vehicle, and international standardization in order to improve professional techniques and the quality of transportation services though railway technical exchanges and experience sharing.

TRA organized 2017 educational training for MOTC personnel handling ethical matters.

To enhance the integrity and business competitiveness of MOTC employees and establish correct workplace knowledge and anticorruption concepts of public servants, TRA organized educational training for employees that handle ethical matters in Conference Room 1. Director–general Lu,Chieh–Shen presided over the training, and Deputy Director Tseng, Chin–Juei of the Department of Government Ethics of the Judicial Yuan, Section Chief Tang, Wen–Bin of the Anti–Corruption Agency, and Deputy Director Hsu, Shi–Yi, Section Chief Kuo, Fang–Bang, Section Chief Hung, Chi–Shin, and Section Chief Tsai, Shin–Hua of the Department of Government Ethics of the MOTC were all invited to give lectures. A total of 130 employees of the Civil Aeronautics Administration, Tourism Bureau, Director General of Highway, and TRA that handle ethical matters participated. Relevant personnel are expected to carry out anti–corruption and ethical regulations to achieve transparent administration and fraud prevention.

Examination Yuan held the 2017 railway transportation personnel examination.

The Examination Yuan held the 2017 railway transportation personnel examination from July 17 to 19, and a total of 26,922 people registered for the examination.

Chishang Station improvements made under the "Six-Year Plan for Improving Railway Safety."

To implement the "Six-Year Plan for Improving Railway Safety", the TRA has consecutively improved the bottleneck sections of Huatung line to enhance railway efficiency. The original two-side platforms were transformed into two-island platforms. Meanwhile, two additional sidetracks have been constructed to efficiently improve route capacity and operation efficiency.

TRA CT273 and JR West Japan C571 signed a sister steam locomotive (SL) train agreement.

TRA CT273 Summer Formosa Express and JR West Japan C571 Shanko Express held a sister SL signing ceremony at Yuli Station, which was presided over by Deputy Director-general Hsu, Ren-Tsai, and Deputy Manager Jun Fukushima of JR West Japan Railway, Manager Hiroshiya Shinnhenn of Yamaguchi Railway Department, Manager Okatouru of the Business Section of Hiroshima Branch, Section Chief Hiroaki Tamai and employee Shun Sakai of the Business Department were invited to present the first service trip ceremony for the "2017 Summer Formosa Express". The sister SL running in both Taiwan and Japan is expected to develop the trend of rail travel in both Taiwan and Japan, as well as deepen the friendship of the two countries. Trains are now running regularly between Yulin-Taitung from June to August.

TRA remodeled the push-pull car into parenting cars for the first time and held a related conference.

To provide better services for the public and promote parental interaction to enhance the intimacy of parent-child travel, the TRA remodeled the PP Tzu Chiang Express cars into parent-child cars and held the parent-child car conference at Nangang Station. Minister Ho Chen, Dan of the MOTC and Director-general Lu,Chieh-Shen co-hosted the first service trip ceremony, while Legislator Li, Kun-Zer of the Executive Yuan, President Wu, Guan-Chin of China Steel Co., Vice President Feng, Shuei-Gang of the Taiwan-Japan Exchange Association were invited to attend. In the future, more parent-child cars will be incorporated into operation to provide an even higher quality of service.

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July

Premier Lin, Chuan inspected the "TRA Double-track Construction Project from Chengkung to Zhueifen Station" accompanied by Director-general Lu, Chieh-Shen of the TRA.

Premier Lin, Chuan of the Executive Yuan is involved with The Forward–looking Infrastructure Development Program (track construction) and inspected the condition of the "TRA Double–track Construction Project from Chengkung to Zhueifen Station." Deputy Minister Tsai, Chi–Chang of the Legislative Yuan, Chief Secretary Chen, Mei–Lin of the Executive Yuan, spokesperson Hsu, Kuo–Yong of the Executive Yuan, Minister Ho Chen, Dan of the MOTC, Taichung Mayor Lin, Chia–Lung, CEO Fang, Sheng–Mao of the Central United Service Center cooperated with the inspection. Director–general Lu,Chieh–Shen accompanied guests through the journey, while director Lin, Chi–Ping of the TRA Project Construction Department presented the constructions.

Friendly relationship agreement with Kintetsu Group Holdings of Japan.

The TRA and Kintetsu Group Holdings Co., Ltd. signed a friendly railway agreement in the lobby of Taipei Main Station at10:00 a.m. Directorgeneral Lu, Chieh-Shen and President Yoshinori Yoshida of JP Kintetsu signed the memorandum, while Section Chief Huang, I-Ping of the International Section of the Tourism Bureau, Director Hsu, Hsu-Shin of the Railway Police Bureau, representative Numata Mikio of the Japan Exchange Association, Taipei Office, and Managing Director Akimasa Yondeda of JP Kintetsu all participated in this great event. Both parties hope to learn about each other's railway travel experiences, mutually promote railway tourism development between Taiwan and Japan, and carry out worldwide marketing.

Therefore, both parties hope that this exchange may lead to increase tourism business for each other and stimulate future development.

Executive Yuan assigned the MOTC to organize the "2017 National Major Infrastructure Facility Protection Drill," with TRA being responsible for the preparation.

The Executive Yuan assigned the MOTC to organize the "2017 National" Major Infrastructure Facility Protection Drill", with the TRA being the organizer and Bangiao Union Station being used as the drill's venue. Director-general Lu, Chieh-Shen was the general commander, while Minister without Portfolio Wu, Hung-Mou of the Executive Yuan, Chief Huang, Chun-Tai of the Homeland Security Office, Administrative Deputy Minister Chi, Wen-Chung of the MOTC, Professor Wan, Yu-Wei of the Central Police University, Professor Chen, Chen-Nan of China University of Technology, Professor Chu, Hui-Chung of Huafan University, Editor Liu, Tai-Yi of All-out Defense Mobilization of the Executive Yuan, and Chief of Staff Major General Li, Jung-Hua of the Third Warzone all attended in person for instructions. This protection drill united TRA, THSR, Taipei MRT, all stores at the station, national security, police department, military, AEC, and MOHW to cooperate with the drill and implement task force organization and division and emergency disaster responses via "military simulation" and "hands-on drills" to reinforce prevention preparedness in a timely manner and practice mobilization for disasters, logistics support, response decisions, and recovery ability in order to achieve the goal of station safety and protection.

Organized the "3rd Formosa Railroad Bento Festival" in cooperation with the 2017 Taiwan Food Exhibition.

The "2017 Taiwan Gourmet Food Exhibition" was held at the Taipei World Trade Center Hall I from July 21 to 24, 2017, and the 3rd Railroad Bento Festival activities were planned in cooperation with the event. The primary topic was "Happy · All the Way", and the idea of "living railway, happy Taiwan" was passed on through the four spotlights of "Ring · Happy, Taste · Happy, Dream · Happy, Enjoy · Happy." In addition to the TRA Bento store, the Europe Swiss Ice train was invited to participate in the exhibition for the first time. Meanwhile, JR East Japan, Seibu tetsudō, Keihin Kyūkō Dentetsu, Tōbu tetsudō, Enoshima dentetsusen, IGR Iwate Galaxy Railway, Dōnan Isaribi Tetsudō, Tenryū Hamanako Tetsudō, Ichibata Denki Tetsudō, Isumi Tetsudō of Japan, and the famous Korean chain store - "BOBBYBOX", a total of 12 railway companies from four countries, participated in the great event. In this activity, Vice President Chen, Jian-Ren, President Yeh, Gu-Lan of the Taiwan Tourism Association, Minister Ho Chen, Dan of the MOTC, Director Chou, Yon-Hui of the Tourism Bureau were all invited to open the ceremony altogether with Director-general Lu, Chieh-Shen via the passing of the "railway tablet."

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August

Premier Lin, Chuan hosted the groundbreaking ceremony for the Qidu-Badu crossover construction.

Premier Lin, Chuan hosted the groundbreaking ceremony for Qidu-Badu crossover construction, while Minister Ho Chen, Dan of the MOTC, Keelung Mayor Lin, Yu-Chang, Chief Secretary Chen, Mei-Lin, spokesperson Hsu, Kuo-Yong of the Executive Yuan, Director-general Lu, Chieh-Shen of the TRA, and Director Hu, Shiang-Lin of the Railway Construction Bureau all participated. To improve external connection traffic in the Eastern area and relieve the bottleneck sections of the eastern and western lines, improvements to the Qidu and Badu crossovers were completed on November 30, and two crossovers between Qidu and Badu were planned and are currently in construction. In addition to improving the overall capacity of the Taipei-Keelung-Yilan route, such construction can further enhance the stability and safety of the track structure. Meanwhile, TRA distribution has become more flexible, thus fulfilling one of the transportation policies of the president.

Director-general Lu, Chieh-Shen hosted the groundbreaking ceremony for the construction of Xinying East Station.

To cooperate with the balanced development of front and rear of Xinying Station, TRA held the groundbreaking ceremony for the construction of Xinying East Station at 9:00 a.m. Director-general Lu,Chieh-Shen hosted the ceremony, while Deputy Minister Fan, Chih-Ku of the MOTC, Legislator Yeh, Yi-Chin of the Legislative Yuan, Chief Secretary Li, Mong-Yan of Tainan City Government and local village heads withal participated in the event. Completing the construction may relieve the traffic on the level crossing of Tungshan Road, which will ensure the safety of the general public, develop a seamless transit function of modern stations in the future, provide complete travel and transportation facilities, lead the overall development of the Xinying area, and effectively encourage the public to use mass transit.

September

BOHSR held the "MOTC 18th Golden Road Award" ceremony at TRA Auditorium.

BOHSR held the "MOTC 18th Golden Road Award" ceremony at TRA Auditorium. Director-general Lu, Chieh-Shen accompanied Chi, Wen-Chung, an administrative minister without portfolio, to attend the ceremony. The outstanding units in of the following six major categories of railway, highway, and rapid transit were praised: good landscaping, station area environmental maintenance, road maintenance, equipment maintenance, road user information, and remarkable engineer life construction. The TRA received awards in the four major categories of station area environmental maintenance, road maintenance, equipment maintenance, and special contribution.

(1) Station area environmental maintenance award.

Grade 1 station

1st place Taipei Transportation Branch, Songshan Station.

2nd place Kaohsiung Transportation Branch, Pingtung Station.

Grade 3 station

1st place Kaohsiung Transportation Branch, Fangliao Station.

2nd place Hualien Transportation Branch, Shanli Station.

3rd place Hualien Transportation Branch, Tungli Station.

(2) Road maintenance award.

Excellence award - Yilan Construction Branch.

(3) Equipment maintenance award.

Rolling stock branch

1st place Changhua Rolling Stock Branch.

2nd place Kaohsiung Rolling Stock Branch.

Locomotive branch

Excellence award - Tainan Power Branch

(4) Special contribution award(personal award)

Yilan Construction Branch - Lin, Jing-Tien(foreman)

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TRA signed industrial-academic cooperation agreements with National Tunghua University, National Hualien Industrial Vocational High School, and National Hualien Vocational High School of Agriculture.

In accordance with the industrial-academic cooperation policies of the government, manage the investment in Huatung railway construction in the future, and actively cultivate railway talents in the Hualien and Taitung areas based on localization, Director-general Lu, Chieh-Shen led Chief Ma, Lin-Yuan of the Personnel Office, Director Fu, Yi-Hong of the Locomotive Branch, Section Chief Wu, Chin-Tien of the Hualien Transportation Branch and the unit heads of the East District to sign "industrial-academic cooperation agreements" with Principal Chao, Han-Chieh of National Tunghua University, Principal Huang, Hong-Ying of National Hualien Industrial Vocational High School, and Principal Liang, Yu-Chen of National Hualien Vocational High School of Agriculture. In addition to the continuous development of railway electrification and improvements to service efficiency, the agreements are expected to encourage young people to stay in their hometowns to contribute to the new vision of the railway business through industrialacademic cooperation and the cultivation of local technical talents and vocational skills.

Opening ceremony for the tunnel between Ruisui and Sanming under the Huatung Railway Electrification Project.

Fan, Chih-Ku of the MOTC, a political minister without a portfolio, hosted the opening ceremony for the tunnel between Ruisui and Sanming under the Huatung Railway Electrification Project. CEO Hsu, Sheng-Chuan of the Eastern Union Service Center, Executive Yuan, Legislator Hsiao, Mei-Chin of the Legislative Yuan, Director Hu, Shiang-Lin of the Railway Construction Bureau and Deputy Director Hsu, Jen-Tsai of the TRA attended the event. Following the opening of a new route, the running of the Huatung line train on the western line of Wuhe New Tzu Chiang Tunnel, and the operation of track construction of the eastern line, which is expected to be completed by June next year. The transportation and preparation after the two-way operation will be enabled, which may shorten train crossing by 3 to 10 minutes and enhance the quality of train services.

TRA signed an industrial-academic cooperation agreement with Taoyuan Ching Hua High School.

In accordance with the industrial-academic cooperation policies of the government and strengthen basic domestic railway education, Directorgeneral Lu, Chieh-Shen led Chief Ma, Lin-Yuan of the Personnel Office, Deputy Director Yang, An-Hsin of the Rolling Stock Branch, and Plant Manager Lin, Mong-Chun of the Fugang Train Base to sign an industrial-academic cooperation agreement with Principal Chen, Kuang-Tseng of the aforementioned school in order to cultivate and improve the railway vehicle maintenance ability of students and decrease the gap between theory and practice. Furthermore, the purpose of signing agreement is to enhance the overall railway transportation service environment through the industrial-academic cooperation for developing basic railway vehicle maintenance talents.

October

Baifu Overhead Bridge Opening Ceremony.

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10/5

10/11

Deputy Director Hsu, Jen-Tsai hosted the Baifu Overhead Bridge opening ceremony, while Keelung Mayor Lin, Yu-Chang, Legislator Tsai, Shih-Ying of the Legislative Yuan were invited to participate in this great event. Due to the hillside terrain and large drop in the Chang'an Community in Xizhi, New Taipei City which makes it difficult for the elderly to access it. In addition, the increasing pedestrians in this section due to rapid population growth, the TRA has actively built a barrier–free Overhead Bridge in Baifu Station to benefit the general public in the area.

Smooth traffic distribution during the Double-Ten Day holiday.

To reduce traffic congestion during the Double-Ten Day holiday for six days from 6 to 11 October 2017, TRA dispatched 284 additional trains and 599 carriages to all TRA lines in order to transport up to 4,545,707 passengers. The average of daily operation volume was 757,618 passengers, which was 9.96% more than the previous year. The total revenue of passenger transportation was NT\$ 432,944,842, which was an average of NT\$ 72,157,474 per day, an increase of 14.81% from the previous year.

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November

TRA conducted the 2017 business integrity promotion and procurement revolution seminar.

To enhance the anti-corruption and business competitiveness of the employees of subordinate institutions and actively promote business integrity, the MOTC organized the business integrity promotion and procurement revolution seminar in Conference Room 1 of the TRA. The director-general presided over the seminar, while Chief Secretary Tseng, Chao-Kai of the Agency Against Corruption, Prosecutor Hsu, Yong-Chin of the Taiwan High Court Administrators Office, Director Chen, Kang-Sheng of the Civil Ethics Department of the MOTC, CEO Liao, Hsing-Chung of the non-governmental organization Taiwan Transparency Organization, and lawyer Huang, Chao-Jen of Wen Tao Law Firm were all invited to deliver lectures. The representatives of 19 suppliers, such as Jing Wei Cheng Information Co., executive officers of the Administration, and other relevant procurement personnel, a total of 90 people, attended the seminar. Through this seminar, it is hoped that suppliers and related personnel can meet anti-corruption standards to achieve the goals of fairness and fraud prevention.

Songshan Station Building BOT forms the development of station city, confirmed by the Golden Thumb Award.

The Songshan Station Building BOT project is the first Private Participation in Infrastructure Project related to transportation constructed and operated by the TRA, as well as the first BOT project to unite business development and a station in the country, to provide a convenient transportation system, a friendly, multi-purpose pedestrian space, and a comfortable shopping environment. It has established an example of station service quality enhancement, decreased the financial burden on the government and living railway network, and been honored with the Golden Thumb Award of the MOF. Director-general Lu, Chieh-Shen led Director Yang, Cheng-De, Section Chief Hsieh, Wu-Chang, and other colleagues to accept the award.

Sister Station Agreement between TRA Guanshan Station and Echigo TOKImeki Railway Guanshan Station of Japan.

11/10

TRA Guanshan Station and Echigo TOKImeki Railway Guanshan Station of Japan signed a sister station agreement at Gaunshan Station at 10:00 a.m. Deputy Director Hsu, Jen-Tsai and Echigo TOKImeki Railway Chairman Shimazu Tadahiro both attended the event. This agreement symbolizes the good relationship between Taiwanese and Japanese railways and can hopefully promote railway tourism exchange between both parties as well as railway line vitalization in order to create future business opportunities.

"Train Operation Safety Six-Year Improvement Plan" Starts Taipei Main Station remodeling construction.

11/16

Taipei Main Station has been considered the biggest domestic transportation and business activity center since it began operation in September 1989. To implement the government's Train Operation Safety Six-Year Improvement Plan, Taipei Main Station's remodeling improvements have started construction. This remodeling plan will include multi-functional facilities and meet the demands of significant amounts of passengers in order to promote economic development and further improve "walk-free" services in the future.

"Train Operation Safety Six-Year Improvement Plan" starts the historical monument safety enhancement and reuse project in Tainan Station.

11/30

Operating since 1936, Tainan Station was appointed a national historical monument in July 1998. In the beginning, the station was designed just to meet basic transportation needs; therefore, the scale and equipment of this station was simple, and the operation equipment and environment are no longer satisfactory for the current barrier—free related regulations. Furthermore, the station structure is old, and its supplementary facilities have been gradually damaged and have exceeded their economic life, resulting in a potential safety crisis. To implement the "Train Operation Safety Six—Year Improvement Plan", Tainan Station reconstruction has been started to enhance station safety and service quality.

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"Train Operation Safety Six-Year Improvement Plan" completion of crossover construction between Qidu-Badu.

Qidu Station is the base station for trains departing on the western line heading south, while the Shulin Station is the base station for trains departing on the eastern line. Shulin to Qidu is the overlapping route for all trains on the eastern and western lines; therefore, the transportation volume cannot be increased. To implement the "Train Operation Safety Six-Year Improvement Plan", two crossovers between Qidu and Badu were constructed to relieve the traffic congestion between Shulin-Qidu and enhance the operation efficiency of the eastern and western lines. The improvement construction of the bottleneck sections has established a good foundation for future track system planning.

December

"Train Operation Safety Six-Year Improvement Plan" Groundbreaking ceremony for green building overhead station room construction of Dounan Station.

To provide convenient train taking on both the east and west sides of Dounan Station and protect the safety of pedestrians crossing the railroad, the groundbreaking ceremony of the overhead station room construction of Dounan Station under the Train Operation Safety Six—Year Improvement Plan" was held. Director—general Lu, Chieh—Shen presided over the ceremony, and Deputy Mayor Ding, Yan—Jer of Yulin County was invited to participate. The new station room will have its height and consistency adjusted to match with the old station room and its surrounding environment. Such construction is expected to create rich value and activities. Besides reinforcing the existing transportation facilities and barrier—free space, the new station room has a multi—purpose space available for local businesses and cultural activities, with the aim of local prosperity and development.

TRA conducted hardware and software upgrades and received a 3A top rating

Taiwan Ratings granted TRA a twAAA rating, the best grade available for long-term credit rating, on December 21, 2017. The company believed that the considerable development potential of the lands owned by TRA in the best areas of Taiwan may gradually increase its cash flow. Meanwhile, the government showed support for increasing the railway transportation share in the Taiwan transaction market and is willing to help TRA with regard to hardware and service upgrades. Doing so should reduce maintenance fees and improve operation efficiency, which will continuously benefit TRA and consolidate the overall operation cash flow. Therefore, Taiwan Rating was granted TRA 3A, the best credit rating.

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Errata

Page	Original	Revised
13-top left column	Double track electrified	Double track
bar chart	Single track electrified	Single track
	Double track non-electrified	Electrified track
	non-electrified distance	Non-electrified track