JRTT

Japan Railway Construction, Transport and Technology Agency

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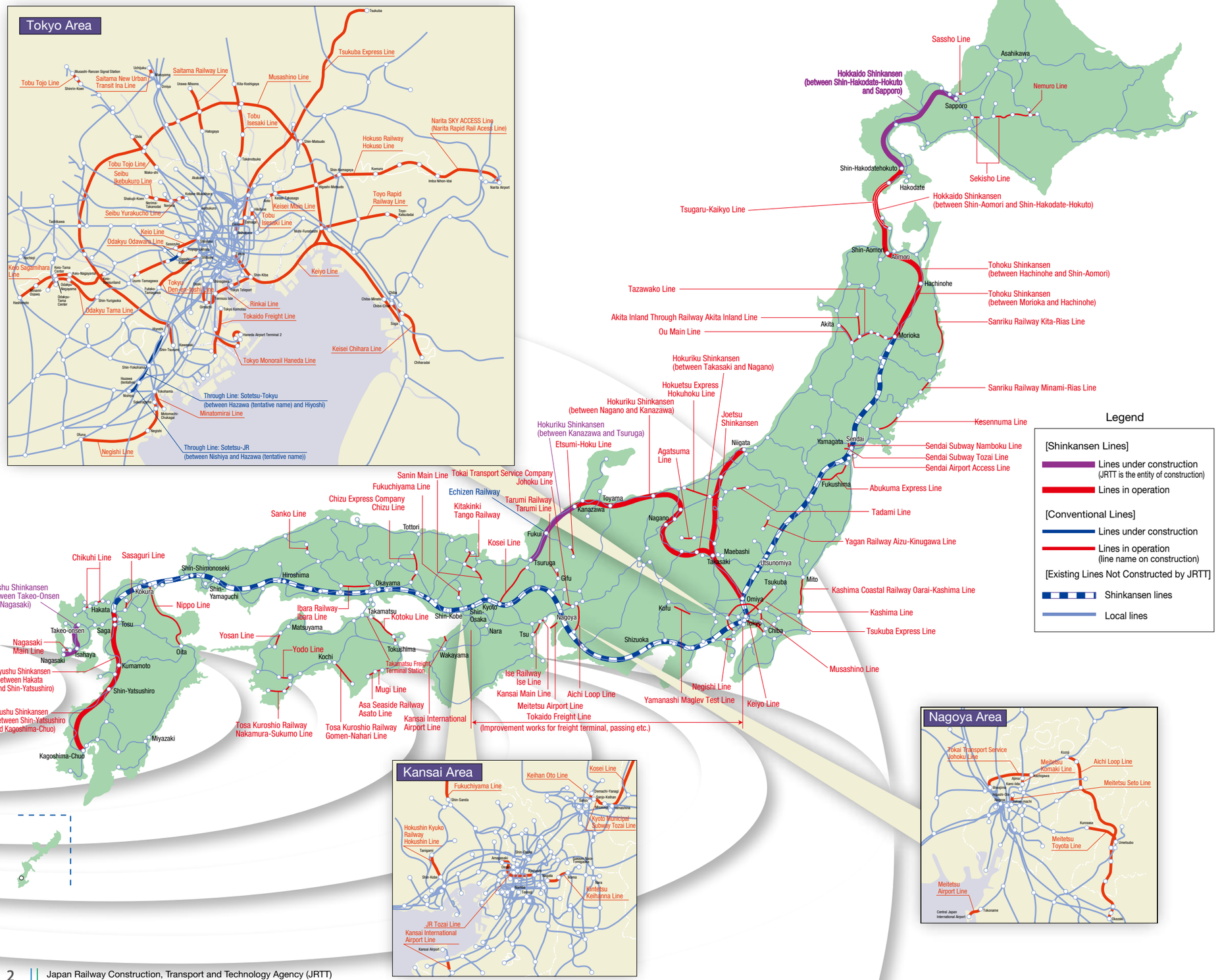
A prosperous future starts here

JRTT

Japan Railway Construction, Transport and Technology Agency
(involved in railway construction)

Lines Constructed by the JRTT



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JRTT Main Railway Construction Projects

Projected Shinkansen Lines

JRTT is performing construction on the Hokkaido Shinkansen between Shin-Hakodate-Hokuto and Sapporo, the Hokuriku Shinkansen between Kanazawa and Tsuruga, and the Kyushu Shinkansen between Takeo-Onsen and Nagasaki.

Hokuriku Shinkansen

Hokkaido Shinkansen

See p. 8-15

Urban Railways

JRTT has been commissioned to perform construction on the Eastern Kanagawa Lines (through lines between Sotetsu Line and JR Line, and between Sotetsu Line and Tokyu Line) as a project to enhance the convenience of urban railways, as well as construction on Echizen Railway lines and others.

Eastern Kanagawa Lines

Tsukuba Express Line

See p. 16-22

Railway Construction Technology

JRTT continues to build on its achievements in technological development in a wide range of fields, namely tunnels and bridges, and its abundant design and construction technology by always using the latest technology to consistently provide railway facilities that meet the needs of clients and passengers.

Sannai-Maruyama Viaduct Bridge (Tohoku Shinkansen)

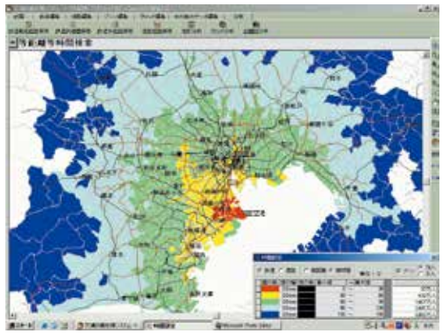
SENS machine

See p. 30-36

Project Research

Our research departments select lines, create operation plans and facility plans, project demand, analyze profitability and socioeconomic effects and more.

The departments provide a wide array of services, from general research in the conceptual stage to detailed research in the implementation stage.



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Comprehensive Technical Capacity for Railway Construction

A wide ranging technical capacity is needed to construct a railway. An immense amount of time and money are also required. As a public institution and general engineer's organization, JRTT secures funding, holds discussions with railway operators and various entities in affected regions, and works to reduce costs in an effort to rapidly construct convenient railways. We accomplish this on the strength of an abundance of experience and technical capacity in the various stages of railway construction—research, planning, design and construction—gained from many years of constructing railways throughout Japan.

Cost Reduction

Our abundant achievements in technological development helps us pioneer the incorporation of economical design and construction technology and make other efforts to reduce construction costs and improve the quality of facilities, thereby reducing their life cycle costs.

Efficient Scheduling

All JRTT departments have expert technology required for railway construction, so we can coordinate schedules between departments and construct railways quickly and efficiently. This leads to the earlier opening of lines we construct, which reduces costs.

Technological Development

JRTT continues to build on its achievements in technological development in a wide range of fields, namely tunnels and bridges, and its abundant design and construction technology by always using the latest technology to provide structures that meet the needs of clients.

Simplification of Procedures

When JRTT is used to create designs, the forms, drawings and other documents and information required to apply for construction permits is substantially simplified. (See *Special System for Designs below)

JRTT uses its comprehensive technical capacity to construct railways that meet needs

Research and Plans for Railway Construction

1 Research and Creation of Construction Plans

JRTT uses its wealth of experience and technical capacity in railway construction—in the selection of routes and station locations, coordination and discussions with relevant organizations, land acquisition, the design and construction of railway structures and more—to create effective, efficient construction plans.

* Special System for Designs: Authorities recognize the advanced technical capacity of JRTT, so when we are selected to create designs, it is possible to simplify the procedures required for railway operators to apply for construction permits and the like (Railway Business Act, Article 14).

In addition, because we implement both the design and the construction, the construction plans we create are more accurate, which leads to reduced costs.

2 Fundraising

An immense amount of money is required to construct railways; however, as a highly trustworthy public institution, JRTT easily secures a wide array of construction funds, including private sector loans.

3 Performance of Construction

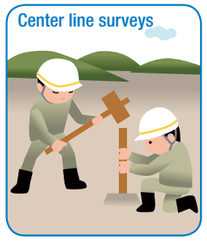
In the course of performing construction, JRTT hosts briefings to elicit the cooperation of local governments and local residents, holding various discussions as appropriate. In addition, we combine the technical capacities of our civil engineering, mechanical engineering, electrical engineering and architectural departments to engage in construction under appropriate management.

Everyone involved in the construction comes together to make efforts to reduce noise and vibrations during construction and otherwise conserve local environments, and prevent accidents involving third parties and other construction accidents.

Railway Construction Process

Public briefings

First, we hold project briefings in each affected area to ask for cooperation with access for surveying and other work.



Center line surveys

We install center line markers and conduct sectional and vertical-horizontal surveys. We also conduct geological surveys required for the construction.

Design discussions

We create overall designs for structures and investigate the width of the land required for them. We use our findings as the basis for discussions with national and local governments and other interested parties about matters such as the exclusive use of rivers and roads that the railway intersects.

Structure design

Once design discussions are complete, we design the structures.

Installation of stakes to mark land to be used

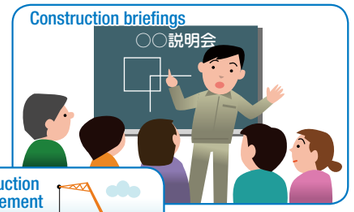
We install stakes to explicitly mark the width of land required for the project, and conduct surveys of the land to be used.

Discussions and land acquisition

To ensure proper remuneration for land to be used, we follow national standards for remuneration and the like.

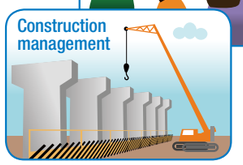
Ordering of construction

The construction is ordered at a price that appropriately reflects past construction projects.



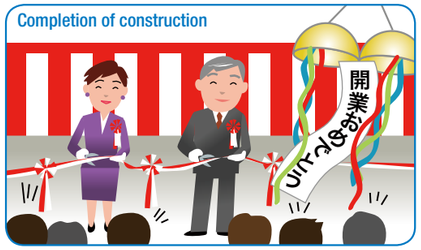
Construction briefings

We hold briefings to explain the process of construction in detail.



Construction management

We provide technical guidance and manage safety, schedules and budgets in addition to ensuring quality so that the construction proceeds smoothly and economically.



Completion of construction

Once construction is complete, we conduct tests (including operation tests with actual rolling stock), and then open railways for operation.

Lending/ delivery

Once construction is complete, facilities are lent or delivered to railway operators.

Construction of Projected Shinkansen Lines

Construction of Projected Shinkansen Lines

"Projected Shinkansen Lines" refers to the five Shinkansen lines—the Hokkaido Shinkansen, the Tohoku Shinkansen (north of Morioka), the Hokuriku Shinkansen, and two lines of Kyushu Shinkansen (the Kagoshima route and the Nishi-Kyushu route)—set out in the Development Program drafted in 1973 based on the Nationwide Shinkansen Railway Development Act. Starting with the construction of the Hokuriku Shinkansen between Takasaki and Karuizawa in 1989, JRTT has completed a total of 929 km of Shinkansen lines to date, including the sections between Shin-Aomori and Shin-Hakodate-Hokuto on the Hokkaido Shinkansen, Takasaki and Kanazawa on the Hokuriku Shinkansen, Morioka and Shin-Aomori on the Tohoku Shinkansen, and Hakata and Kagoshima-Chuo on the Kyushu Shinkansen. After completion, we lend the railway facilities to the various branches of JR, which operate the lines and provide service to many people.

Hokuriku Shinkansen "Kagayaki"

Tohoku Shinkansen "Hayabusa"

Kyushu Shinkansen "Mizuho"

Legend

- Shinkansen lines in operation
- Shinkansen under construction (JRTT is the entity of construction)

Takeo-Onsen to Nagasaki

[66km]

We began construction on this section with the intent to complete construction around 10 years after receiving the permit.

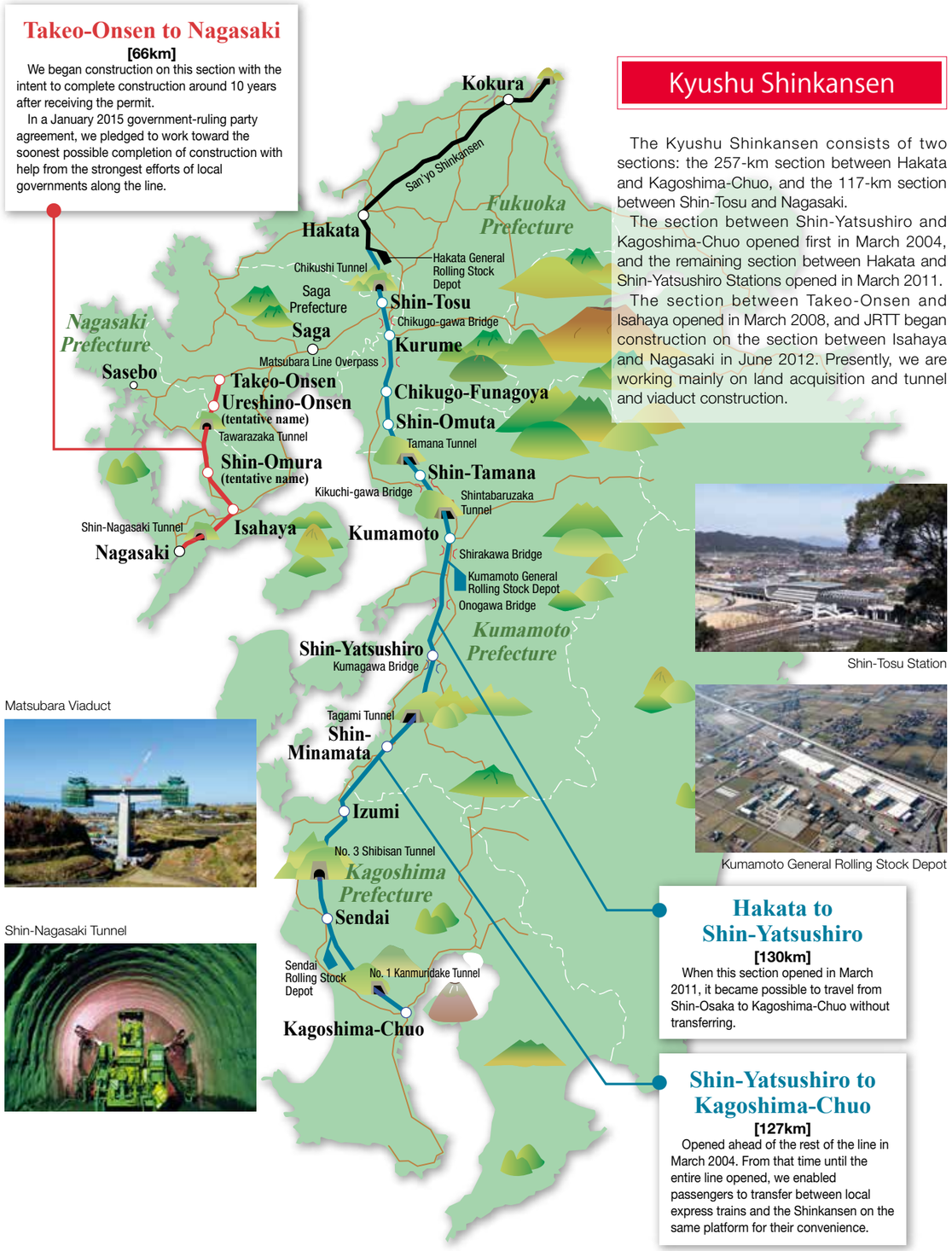
In a January 2015 government-ruling party agreement, we pledged to work toward the soonest possible completion of construction with help from the strongest efforts of local governments along the line.

Kyushu Shinkansen

The Kyushu Shinkansen consists of two sections: the 257-km section between Hakata and Kagoshima-Chuo, and the 117-km section between Shin-Tosu and Nagasaki.

The section between Shin-Yatsushiro and Kagoshima-Chuo opened first in March 2004, and the remaining section between Hakata and Shin-Yatsushiro Stations opened in March 2011.

The section between Takeo-Onsen and Isahaya opened in March 2008, and JRTT began construction on the section between Isahaya and Nagasaki in June 2012. Presently, we are working mainly on land acquisition and tunnel and viaduct construction.



Matsubara Viaduct

Shin-Nagasaki Tunnel

Shin-Tosu Station

Kumamoto General Rolling Stock Depot

Hakata to Shin-Yatsushiro

[130km]

When this section opened in March 2011, it became possible to travel from Shin-Osaka to Kagoshima-Chuo without transferring.

Shin-Yatsushiro to Kagoshima-Chuo

[127km]

Opened ahead of the rest of the line in March 2004. From that time until the entire line opened, we enabled passengers to transfer between local express trains and the Shinkansen on the same platform for their convenience.

Construction of Projected Shinkansen Lines

Hokuriku Shinkansen

The Hokuriku Shinkansen connects Takasaki and Osaka over a stretch of some 600 km.

The section between Takasaki and Nagano opened in October 1997, and the section between Nagano and Kanazawa opened in March 2015.

We began construction on the section between Kanazawa and Tsuruga in June 2012. Presently, we are working mainly on land acquisition and tunnel and long bridge construction.

Hakusan General Rolling Stock Depot

Kanazawa Station

Jinzu-gawa Bridge

Toyama Station

Joetsumyoko Station

Fukui-Takayanagi Viaduct

Kuzuryu-gawa Bridge

Shin-Hokuriku Tunnel

Kanazawa to Tsuruga

[125km]

We began construction on this section with the intent to complete it a little more than 10 years after the opening of the section between Nagano and Kanazawa.

In a January 2015 government-ruling party agreement, we pledged to expedite the scheduled completion and route opening date of FY 2025 to FY 2022 with help from the strongest efforts of local governments along the line.

Takasaki to Nagano

[117km]

After opening in October 1997, this section made a major contribution to transportation during the Nagano Olympics, and has had a history of quality transportation ever since.

Nagano to Kanazawa

[228km]

When this section opened in March 2015, it drastically reduced the travel time between Tokyo and the Hokuriku region. Tourism, business and other positive effects are expected.

Iiyama Station

Construction of Projected Shinkansen Lines

Sannai-Maruyama Viaduct Bridge

Tohoku/Hokkaido Shinkansen

The Tohoku Shinkansen was complete when the section between Hachinohe and Shin-Aomori opened in December 2010 to form a 675-km connection from Tokyo to Shin-Aomori.

The Hokkaido Shinkansen spans some 360 km from Shin-Aomori to Sapporo. The 149-km section between Shin-Aomori and Shin-Hakodate-Hokuto opened in March 2016.

We began construction on the 211-km section between Shin-Hakodate-Hokuto and Sapporo in June 2012, and are presently working mainly on land acquisition and tunnel construction.

Hakkoda Tunnel

Seikan Tunnel

The longest undersea tunnel in the world at 53.9 km. Opened as the Tsugaru-Kaikyo Line in 1988.

From the start, the tunnel was designed to accommodate a Shinkansen line, and a third set of tracks was installed and other improvements were made. As a result, Shinkansen and local trains presently run side by side in the tunnel.

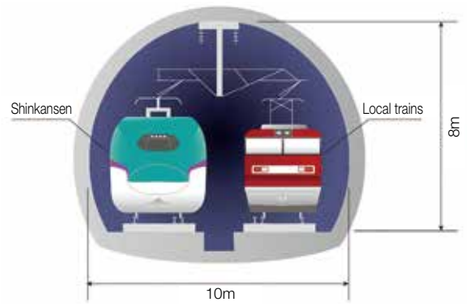
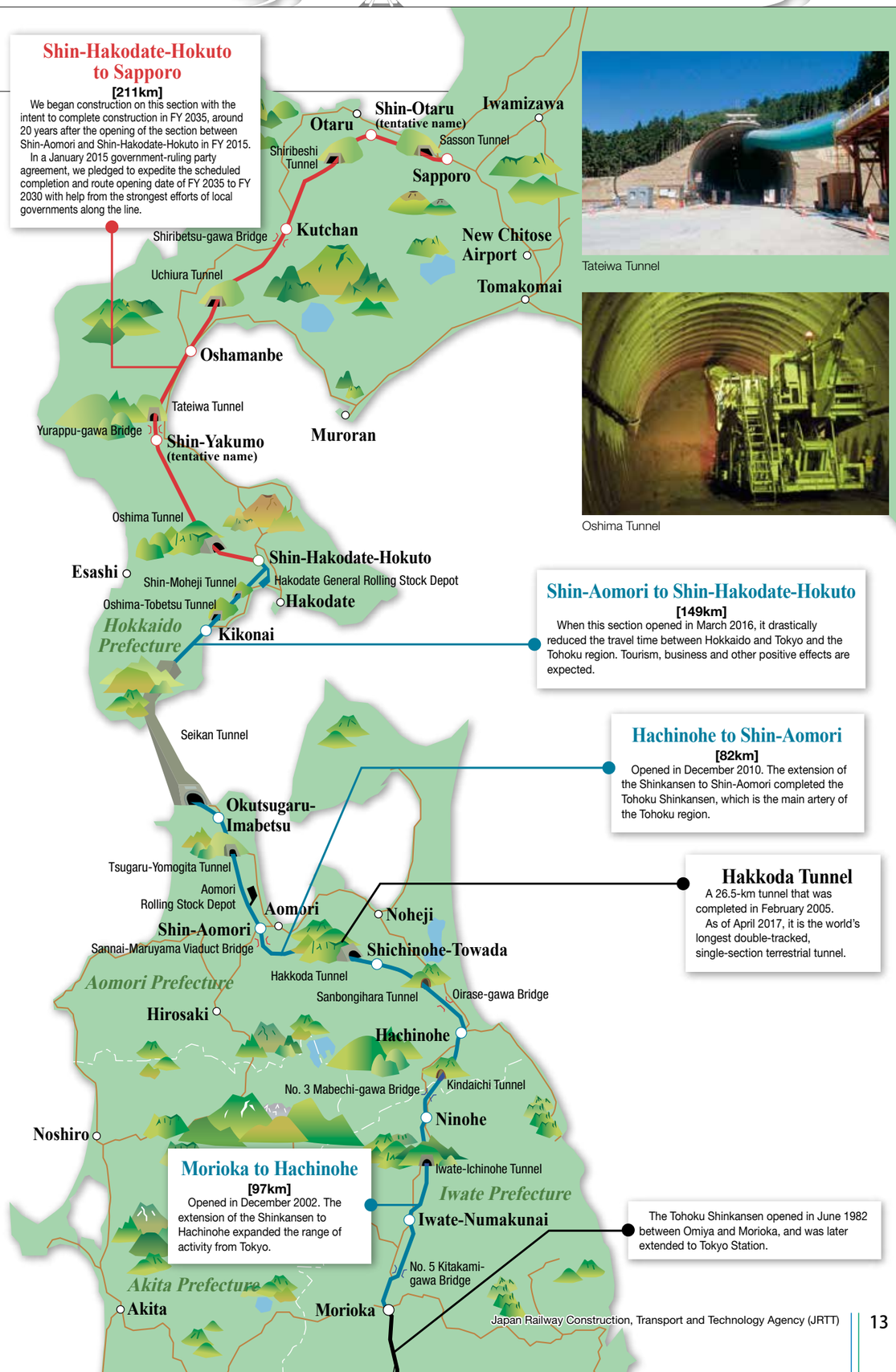


Image of side-by-side operation

Shin-Hakodate-Hokuto Station

Seikan Tunnel

Shin-Aomori Station



Tateiwa Tunnel

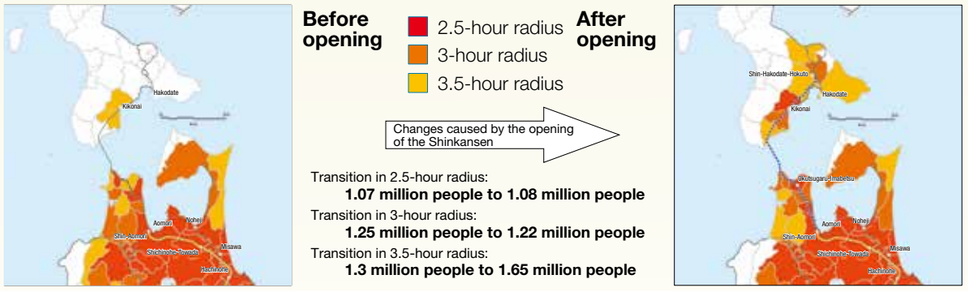
Oshima Tunnel

Effects of Projected Shinkansen Lines Since Opening

Many people are able to travel faster.

The expansion of the Shinkansen network has allowed many people to travel faster from towns along the Shinkansen lines to Tokyo, Fukuoka and other destinations.

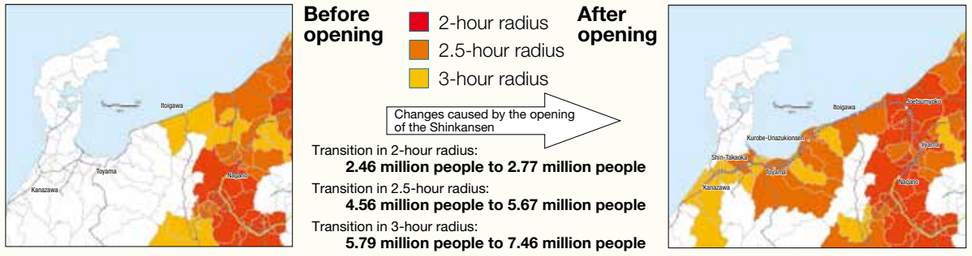
Hokkaido Shinkansen (between Shin-Aomori and Shin-Hakodate-Hokuto Stations) Travel Time to Sendai Station



Transition in 2.5-hour radius:
1.07 million people to 1.08 million people
Transition in 3-hour radius:
1.25 million people to 1.22 million people
Transition in 3.5-hour radius:
1.3 million people to 1.65 million people

Note: "Transition to 3.0-hour radius" is the total population of the 2.5-hour radius and the 3.0-hour radius; "Transition to 3.5-hour radius" is the total population of the 2.5-hour radius, the 3.0-hour radius and the 3.5-hour radius.
Sources: The 2015 Population Census (Totals for municipalities as of March 2015)
For travel time, timetables were used to calculate the time required to access Shinkansen stations from administrative offices in each municipality.
The timetable published in March 2015 was used for the period before opening, and the timetable published in April 2016 was used for the period after opening.

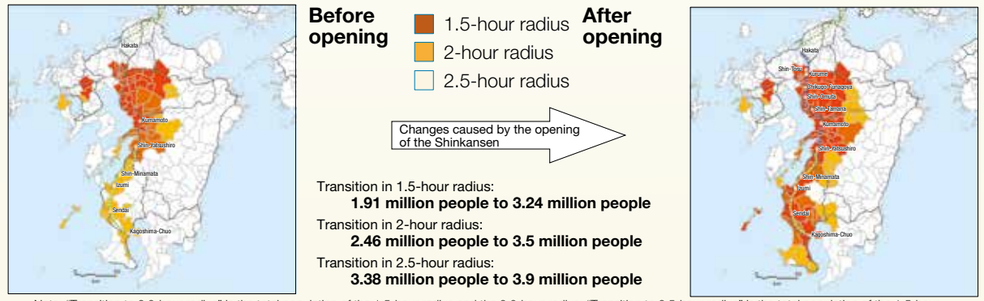
Hokuriku Shinkansen (between Nagano and Kanazawa Stations) Travel Time to Tokyo Station



Transition in 2-hour radius:
2.46 million people to 2.77 million people
Transition in 2.5-hour radius:
4.56 million people to 5.67 million people
Transition in 3-hour radius:
5.79 million people to 7.46 million people

Note: "Transition to 2.5-hour radius" is the total population of the 2-hour radius and the 2.5-hour radius; "Transition to 3-hour radius" is the total population of the 2-hour radius, the 2.5-hour radius and the 3-hour radius.
Sources: The 2015 Population Census (Totals for municipalities as of March 2015)
For travel time, timetables were used to calculate the time required to access Shinkansen stations from administrative offices in each municipality.
The timetable published in March 2014 was used for the period before opening, and the timetable published in March 2015 was used for the period after opening.

Kyushu Shinkansen (between Hakata and Kagoshima-Chuo Stations) Travel Time to Hakata Station



Transition in 1.5-hour radius:
1.91 million people to 3.24 million people
Transition in 2-hour radius:
2.46 million people to 3.5 million people
Transition in 2.5-hour radius:
3.38 million people to 3.9 million people

Note: "Transition to 2.0-hour radius" is the total population of the 1.5-hour radius and the 2.0-hour radius; "Transition to 2.5-hour radius" is the total population of the 1.5-hour radius, the 2.0-hour radius and the 2.5-hour radius.
Sources: The 2015 Population Census (Totals for municipalities as of March 2015)
For travel time, timetables were used to calculate the time required to access Shinkansen stations from administrative offices in each municipality.
The timetable published in March 2010 was used for the period before opening, and the timetable published in March 2012 was used for the period after opening.

Hokuriku Shinkansen (between Takasaki and Nagano)

A new community has grown around the station.

Sakudaira Station

Kyushu Shinkansen (between Shin-Yatsushiro to Kagoshima-Chuo)

A bus terminal, parking lot and other improvements continue to be made around the Shinkansen, which is the core of a wide-ranging transportation network.

Kagoshima-Chuo Station

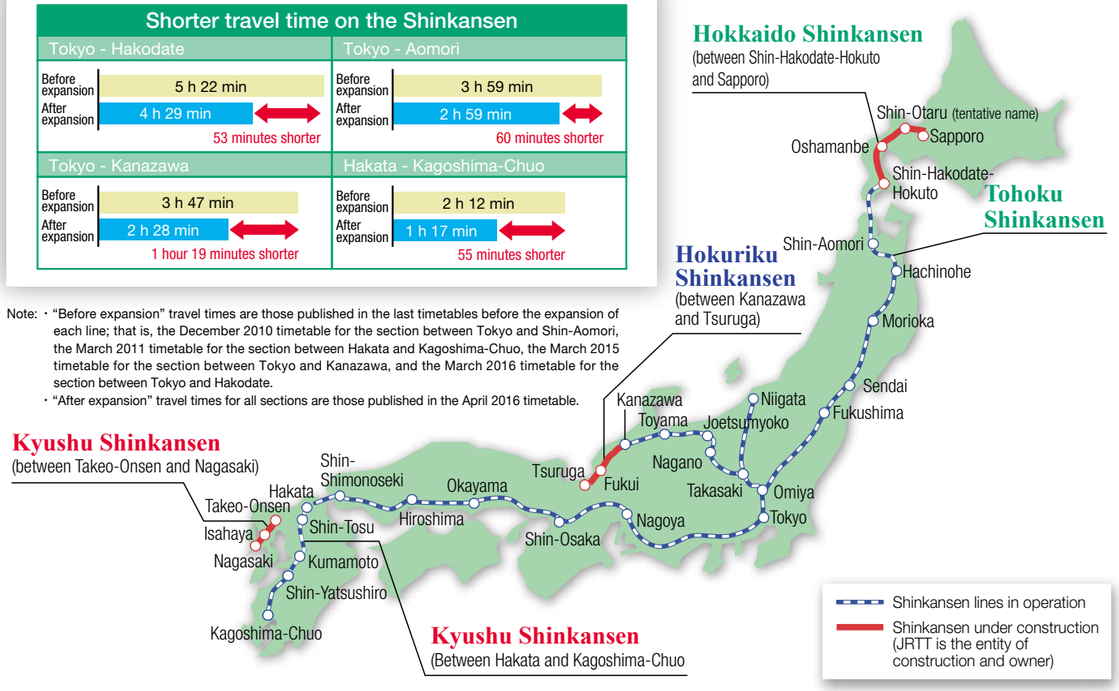
Shinkansen: Present and Future

JRTT is continuing to perform construction on the Hokkaido Shinkansen between Shin-Hakodate-Hokuto and Sapporo, the Hokuriku Shinkansen between Kanazawa and Tsuruga, and the Kyushu Shinkansen between Takeo-Onsen and Nagasaki.

Shorter travel time on the Shinkansen

	Before expansion	After expansion	Shorter
Tokyo - Hakodate	5 h 22 min	4 h 29 min	53 minutes shorter
Tokyo - Aomori	3 h 59 min	2 h 59 min	60 minutes shorter
Tokyo - Kanazawa	3 h 47 min	2 h 28 min	1 hour 19 minutes shorter
Hakata - Kagoshima-Chuo	2 h 12 min	1 h 17 min	55 minutes shorter

Note: ・"Before expansion" travel times are those published in the last timetables before the expansion of each line; that is, the December 2010 timetable for the section between Tokyo and Shin-Aomori, the March 2011 timetable for the section between Hakata and Kagoshima-Chuo, the March 2015 timetable for the section between Tokyo and Kanazawa, and the March 2016 timetable for the section between Tokyo and Hakodate.
・"After expansion" travel times for all sections are those published in the April 2016 timetable.



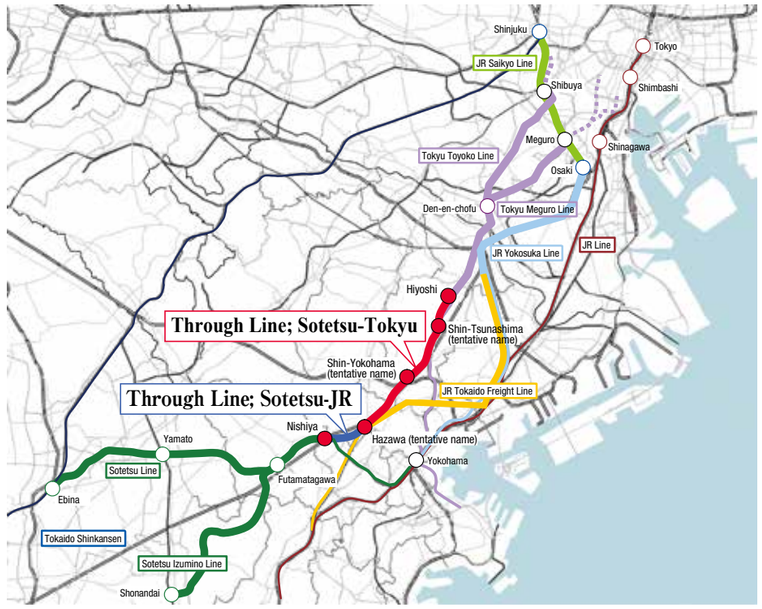
Construction of Urban Railways

Eastern Kanagawa Lines (through lines between Sotetsu Line and JR Line, and Sotetsu Line and Tokyu Line)

"The Eastern Kanagawa Lines" refer to two lines: the through lines between Sotetsu Line and JR Line, on which trains from Nishiya Station can enter the JR Tokaido Freight Line near Yokohama-Hazawa Station on the JR Tokaido Freight Line; and the through lines between Sotetsu Line and Tokyu Line, on which trains from the area near Yokohama-Hazawa Station on the JR Tokaido Freight Line can travel via Shin-Yokohama Station to enter the Tokyu Lines from Hiyoshi Station on the Tokyu Toyoko and Tokyu Meguro Lines.

The improvement of these lines will directly connect western Yokohama City and central Kanagawa Prefecture to central Tokyo, thereby improving the convenience of transportation between those regions by improving promptness, increasing route options, reducing the number of transfers, easing traffic on existing lines, and improving access to the Shinkansen. These improvements will also contribute to the formation of a wide-ranging railway network, the advancement of services and the reinvigoration of communities along the routes. These lines represent the first effort toward improving promptness based on the Act on Enhancement of Convenience of Urban Railways, etc. (see Overview below), which includes provisions on improving railways using the separation of infrastructure and operation method, in which the entity of construction is separated from entities of operation, and the like. The promptness improvement plan for these lines has been approved with JRTT as the entity of construction, and the Sagami Railway Company and Tokyu Corporation as the entities of operation.

Route Overview: Eastern Kanagawa Lines (Through Line; Sotetsu-JR/Sotetsu-Tokyu)

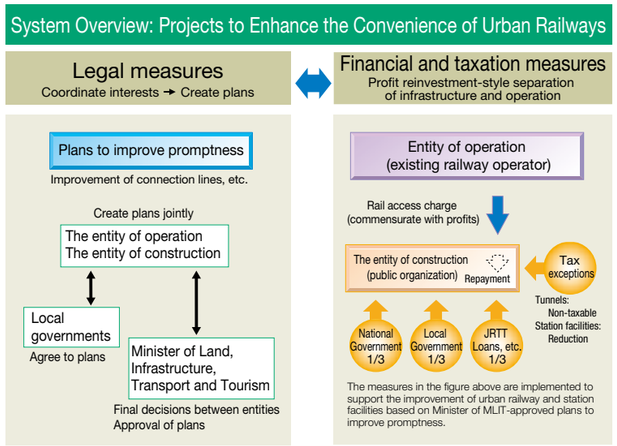


Overview of the Act on Enhancement of Convenience of Urban Railways, etc.

The Act on Enhancement of Convenience of Urban Railways, etc. sets out new methods of improving railways involving the effective use of existing urban railway stock to improve promptness and facilitate the use of station facilities. One method employed in this system is the separation of infrastructure and operation, in which the entities of construction (third-sector and other public entities) are separated from the entities of operation (railway operators and the like).

According to the procedures set out in the act, when the Minister of Land, Infrastructure, Transport and Tourism approves a concept, the entity responsible for the approved concept creates and submits plans to improve promptness. Once the minister approves the plans, they are regarded as having received permission to implement railway operations under the Railway Business Act.

It is worth noting that the Japanese government, local governments (Kanagawa Prefecture and the city of Yokohama) and JRTT will each cover one-third of the project costs of the through lines between Sotetsu and JR Line, and Sotetsu and Tokyu Line, and that the Sagami Railway Company and Tokyu Corporation will pay rail access charge (commensurate with profits) to JRTT.



Project Overview

Overview of Eastern Kanagawa Lines (Through Lines; Sotetsu-JR /Sotetsu-Tokyu)	
Sections	○ Sotetsu-JR: From Nishiya Station on the Sotetsu Line to the area near Yokohama-Hazawa Station on the JR Tokaido Freight Line ○ Sotetsu-Tokyu: From the area near Yokohama-Hazawa Station on the JR Tokaido Freight Line to Hiyoshi Station on the Tokyu Toyoko and Tokyu Meguro Lines
The entity of construction	JRTT
The entity of operation	○ Sotetsu-JR: Sagami Railway Company ○ Sotetsu-Tokyu: Sagami Railway Company, Tokyu Corporation
Length	12.7km (Sotetsu-JR: 2.7km, Sotetsu-Tokyu: 10.0km)
Track gauge	1,067mm
Frequency of operation (during the peak of the morning rush-hour)	○ Sotetsu-JR: around 4 trains ○ Sotetsu-Tokyu: around 10 to 14 trains
Scheduled operation start	○ Sotetsu-JR: Second half of FY 2019 ○ Sotetsu-Tokyu: Second half of FY 2022

[Effects of improvement: Reduced travel times, improved Shinkansen access]

*Estimated travel times for the morning rush hour. Travel times include transfer time and waiting time.

Progress of Construction

Through Line; Sotetsu-JR

Construction on this section will result in a direct connection between the Sotetsu Line and central Tokyo via the JR Tokaido Freight Line.

Completed civil engineering works near Nishiya Station

Track-laying in Nishiya Tunnel

Completed civil engineering works at Hazawa Station (tentative name)

Through Line; Sotetsu-Tokyu

Construction on this line will result in a direct connection between the Sotetsu Line and central Tokyo via the Tokyu Toyoko and Tokyu Meguro Lines.

Perspective drawing of Shin-Yokohama Station (tentative name) as envisioned

Construction on Shin-Yokohama Station (tentative name)

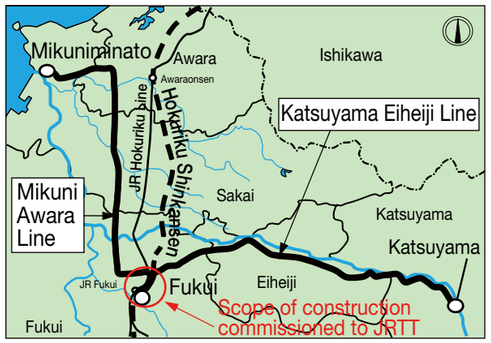
Through lines between Sotetsu Line and JR Line, and Sotetsu Line and Tokyu Line

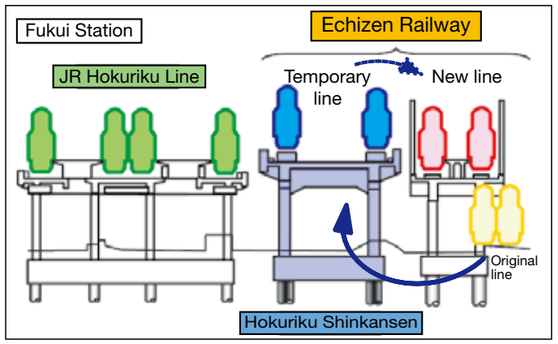
Construction of Urban Railways

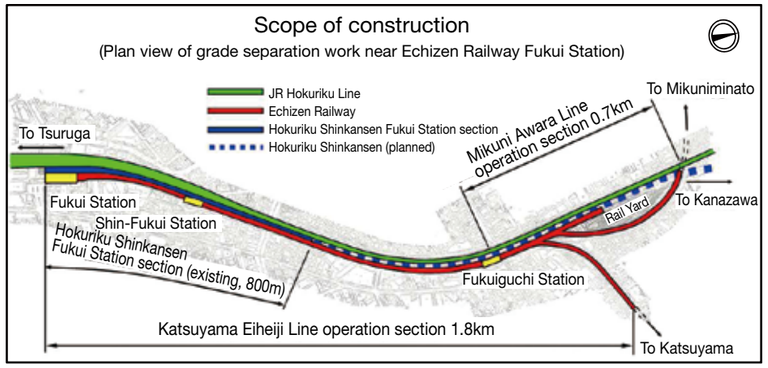
Construction to Elevate the Echizen Railway (Katsuyama Eiheiji Line/Mikuni Awara Line)

The Fukui prefectural government has planned to elevate the Echizen Railway Katsuyama Eiheiji Line, Mikuni Awara Line and spur lines to the depot as part of a project to create a consecutive series of grade-separated crossings near Fukui Station. In September 2013, Echizen Railway Company commissioned JRTT to perform the elevation construction, which involves rerouting the original ground-level line (in yellow) to a temporary line on the existing Hokuriku Shinkansen viaduct (in blue), and then building a viaduct for the new line (in red) over the original line.

The temporary line went into operation in September 2015. Construction on the new line is ongoing, and the new line is scheduled to open in 2018.








Panoramic view of Fukui Station

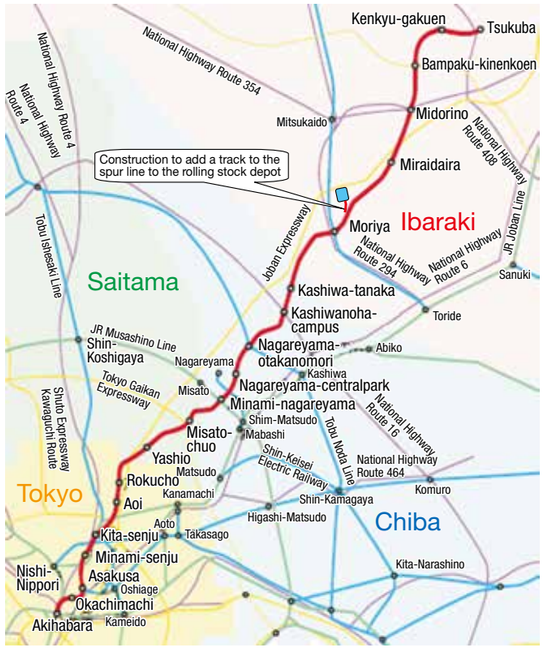

Construction of tracks at Fukui Station

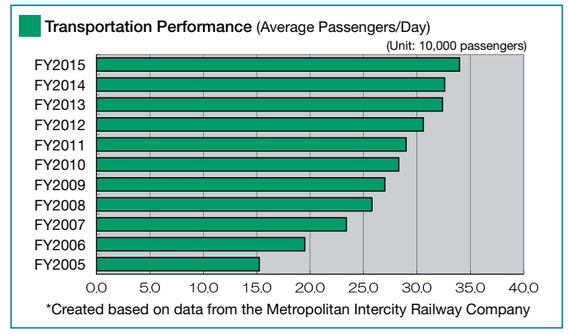
Tsukuba Express Line (opened in August 2005)

The Tsukuba Express Line is a 58-km express train that travels up to 130 km/h to connect Akihabara to Tsukuba Science City in as little as 45 minutes. Since its opening on August 24, 2005, the line has provided a highly convenient, improved transportation system and improved the comfort of commutes into the northeastern part of the capital by easing congestion on the JR Joban Line and others.

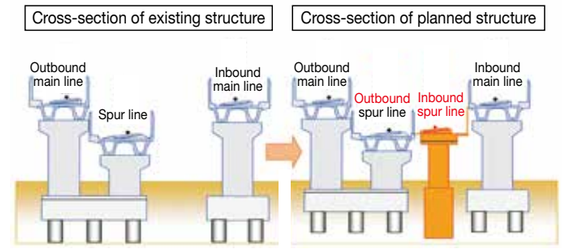
The hallmarks of this line are the high quality of convenience and promptness that spur the continual construction of housing and the opening of a large shopping mall along the line, which produced a 120% increase in the number of passengers in the line's first 11years since opening.

In light of increasing congestion, in March 2013, the Metropolitan Intercity Railway Company commissioned JRTT to perform construction to add a track to the spur line from Moriya Station to a rolling stock depot. The original spur line consisted of a single track, and the second line was added to ensure the fulfillment of rolling stock depot functions. We completed the construction in March 2017, at which time the new line went into service.





Overview of construction to add a track to the spur line to the rolling stock depot



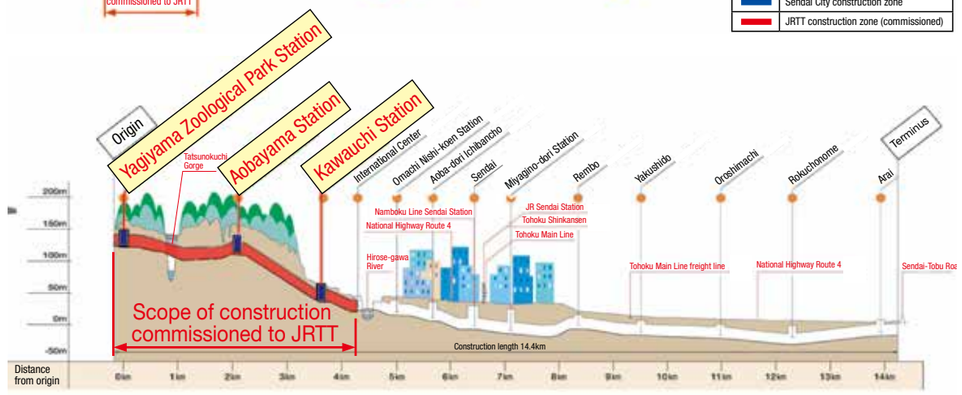
Construction of Urban Railways

Sendai Subway Tozai Line (opened in December 2015)

The Sendai Subway Tozai Line is a new, 14.4-km subway line that connects the area near Yagiyama Zoological Park in the southwestern part of the city to the Sendai-higashi Interchange in the eastern part of the city via Sendai Station in downtown Sendai. The Tozai Line joins the Namboku Line, which is already in operation, to create a transportation network that forms the backbone of the city of Sendai. JRTT was commissioned with civil engineering construction and track installation over a 4.3-km section starting at Yagiyama Zoological Park Station, the origin of the line.

Notable characteristics of the zone entrusted to us include the large-section excavation of the Yagiyama Tunnel using NATM; the construction of the Tatsunokuchi Bridge, a double-decked truss bridge for both rail and automobile traffic with few precursors in Japan; and the steep section between Omachi Nishi-koen and Yagiyama Zoological Park, which features an elevation difference of 110 m and a maximum gradient of 57‰. A lean linear motor system is used to propel the rolling stock in an effort to reduce construction costs, account for the steepness of the route and consider factors such as demand for train boarding and exiting.

Tatsunokuchi Bridge, a double-decked truss bridge for rail and automobile traffic



Narita Sky Access Line (opened in July 2010)

The Narita Sky Access Line is an airport access railway that connects Narita Airport, the main gateway to Japan, to central Tokyo. The 51.4-km line opened on July 17, 2010. Trains operate at a maximum speed of 130 km/h in the 32.3-km section between Keisei-Takasago Station and Inba-Nihon-Idai Station on the Hokuso Line, a stretch on which improvements were made to the existing Keisei Line; and a maximum speed of 160 km/h in the newly constructed 10.7-km section between Inba-Nihon-Idai and Tsuchiya as well as the 8.4-km section between Tsuchiya and Narita Airport Terminal 1 on the Narita Airport Rapid Railway Line.

Compared to the Keisei Main Line, which was the original route, the new line trims 15 minutes from the travel time between central Tokyo and Narita Airport (on the fastest trains between Nippori and Narita Airport Terminal 2 3 Stations). The new line has also improved convenience for passengers from northwestern Chiba Prefecture and contributed to the linking and enhancement of functions of the city of Narita and the Chiba New Town development.

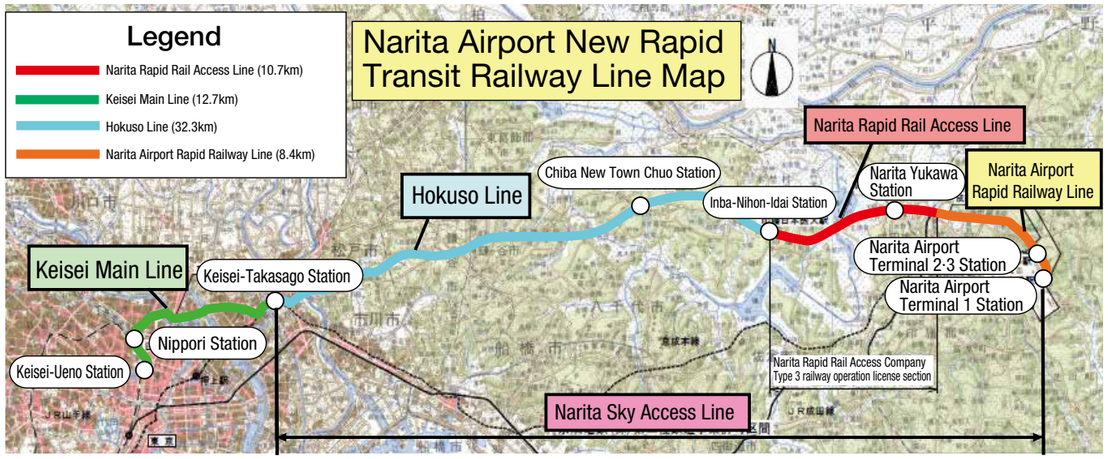
The Skyliner with Lake Inba-numa in the background

Effects of improvements

Travel time on Narita Airport Access
(Between Nippori Station on the Keisei Main Line to Narita Airport Terminal 2·3 Station)

Before opening	Shortest travel time: 51 min
After opening	Shortest travel time: 36 min — 15 minutes shorter

(Source: Created from the Keisei Electric Railway Company website)



Construction of Urban Railways

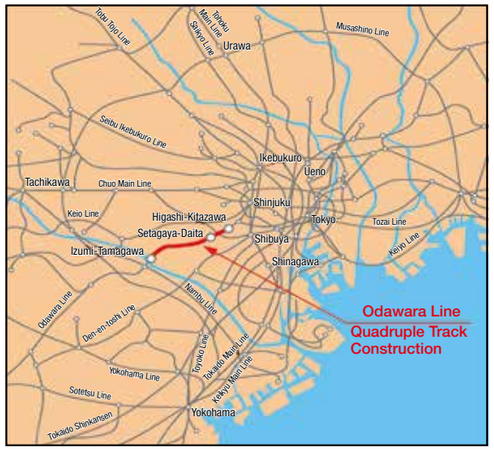
Odakyu Odawara Line Quadruple Track Construction (between Higashi-Kitazawa and Izumi-Tamagawa) (Private Railway Project)

To increase the transportation capacity of railways in major urban areas (Tokyo, Osaka, Nagoya and their environs), JRTT implements rush projects for private railways to construct new tracks, upgrade to quadruple tracks and the like. Presently, we are constructing quadruple tracks on the 10.4-km section between Higashi-Kitazawa and Izumi-Tamagawa on the Odakyu Odawara Line.

We are integrating this upgrade to quadruple tracks on the Odawara Line into the city planning project to create consecutive series of grade-separated crossings throughout Tokyo, and have already completed work on the 8.8-km section between Setagaya-Daita and Izumi-Tamagawa on the line.

As for the remaining 1.6-km section between Higashi-Kitazawa and Setagaya-Daita, we completed the process of moving the double tracks underground (for use by the express line) in March 2013 to remove all level crossings. We completed construction of the quadruple tracks at the end of FY 2017 and are presently performing construction with the aim to complete the project within FY 2018.

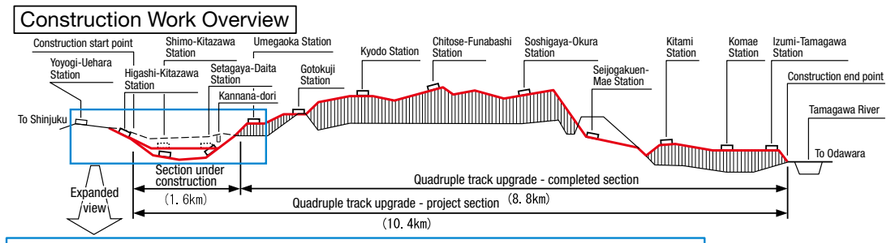
The upgrade to quadruple tracks is expected to reduce travel times and enable the departure of more trains, which should ease congestion and produce other positive effects.

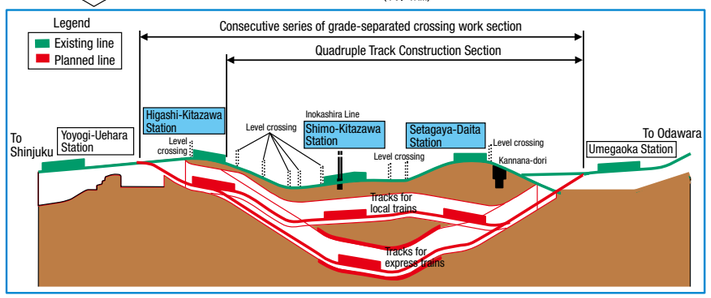


New underground platform at Shimo-Kitazawa Station

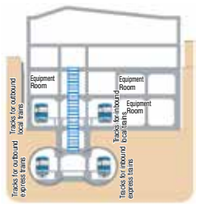
Track-laying work for the upgrade to quadruple tracks

Construction Work Overview





Shimo-Kitazawa Station Cross-Section (upon completion)



Assistance for Restoration after the Great East Japan Earthquake

Sanriku Railway Kita-Rias Line/Minami-Rias Line (fully reopened in April 2014)

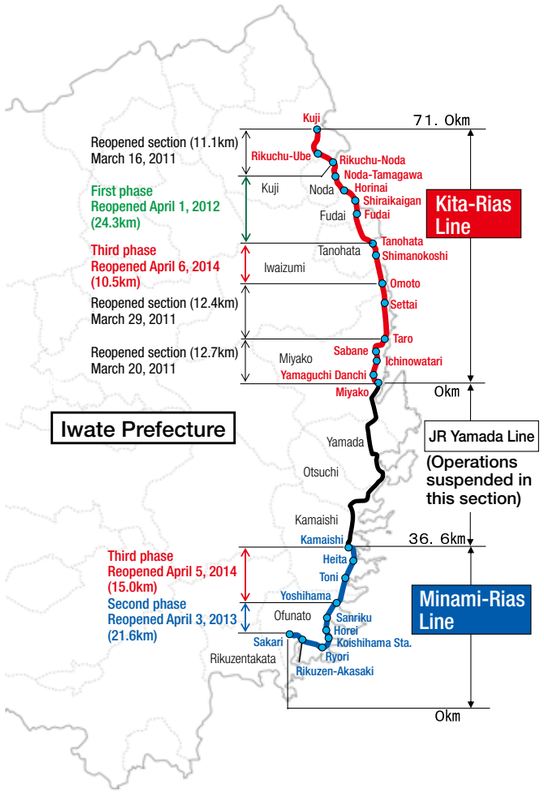
The former Japan Railway Construction Public Corporation began construction on the Kuji and Sakari Lines in 1965, but construction was suspended in 1980 under the Japanese National Railways Reconstruction Act. Sanriku Railway was founded as a third-sector corporation (a public-private joint venture) in November 1981, and on April 1, 1984, the corporation opened the first Special Local Lines after the transition to third-sector management. The lines were dubbed the “Kita-Rias Line” and the “Minami-Rias Line.”

The enormous tsunami waves generated by the Great East Japan Earthquake on March 11, 2011 caused destructive damage to the Sanriku Railway lines. On November 1, 2011, Sanriku Railway commissioned JRTT to perform restoration work and other tasks, and we provided assistance for the restoration on all fronts.

This restoration work mainly consisted of recovering embankments, tracks and communication cables swept away by the tsunami waves, rebuilding stations and bridges, and repairing bridges damaged by the earthquake. Operation on the lines resumed in stages until the lines were fully reopened, starting with the section of the Kita-Rias Line between Tanohata and Rikuchu-Noda on April 1, 2012, followed by the section of the Minami-Rias Line between Sakari and Yoshihama on April 3, 2013, the section of the Minami-Rias Line between Yoshihama and Kamaishi on April 5, 2014, and the section of the Kita-Rias Line between Komoto and Tanohata on April 6, 2014.

Overview of Sanriku Railway Kita-Rias Line/Minami-Rias Line Restoration Work

1. Route Overview



2. Progress of Restoration

Kita-Rias Line, section between Tanohata and Rikuchu-Noda (tracks swept away by tsunami)

After restoration

Kita-Rias Line, section between Komoto and Tanohata (tracks, bridge swept away by tsunami)

After restoration

Minami-Rias Line, section between Sakari and Yoshihama (tracks swept away by tsunami)

After restoration

Minami-Rias Line, section between Yoshihama and Kamaishi (bridge swept away by tsunami)

After restoration

3. Reopening of Lines

Reopened on April 1, 2012
(Kita-Rias Line, section between Tanohata and Rikuchu-Noda)

(A Sanriku Railway train operating in the Tofugaura region)

Reopened on April 6, 2014
(Kita-Rias Line, section between Komoto and Tanohata)

(A Sanriku Railway train stopped at Shimanokoshi Station)

Reopened on April 3, 2013
(Minami-Rias Line, section between Sakari and Yoshihama)

(A Sanriku Railway train operating in the Tomari area)

Reopened on April 5, 2014
(Minami-Rias Line, section between Yoshihama and Kamaishi)

(A Sanriku Railway train operating in the Owatari-gawa River)

Sendai Airport Acess Line (opened in March 2007)

JRTT was commissioned to construct the Sendai Airport Access Line, which opened on March 18, 2007. The damage the line suffered due to the Great East Japan Earthquake on March 11, 2011 was so massive that operations had to be suspended on the entire line.

The Miyagi prefectural government and Sendai Airport Transit Company requested our assistance, and we provided technical assistance on all fronts for the recovery through efforts such as sending out an advance team to conduct field surveys immediately after the earthquake, to assigning two workers to Sendai Airport Transit in April 2011 to investigate proposals for restoration measures, manage restoration work, and survey the health of existing structures.

We also established an assistance system within JRTT and made other efforts to cooperate with the soonest possible restoration of the Sendai Airport Access Line, reopening the section of the line between Natori and Mitazono on July 23, 2011, and finally reopening the entire line through to Sendai Airport Station on October 1, 2011.

Sendai Airport Station Operation control office

Before restoration (1F)

After restoration (2F)

Inside the airport tunnel

Before restoration:
Tracks displaced, joints misaligned

After restoration

Near the entrance to the airport tunnel

Before restoration:
Destroyed electrical facilities, noise barriers, etc.

After restoration

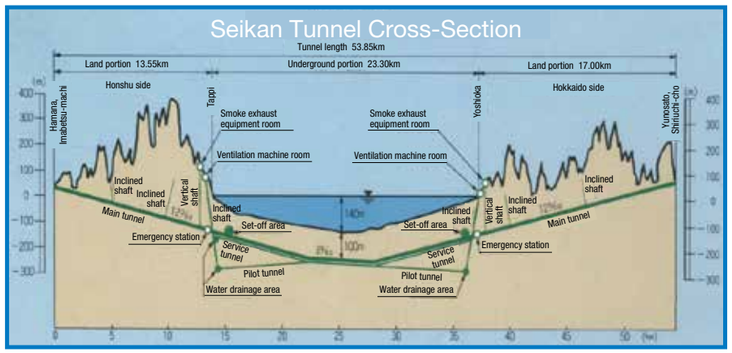
Seikan Tunnel

1. Overview

The 1954 sinking of the Toya Maru, a ferry that ran between Aomori and Hakodate, by a fierce typhoon was the second-worst maritime disaster in history, and spurred the construction of an undersea tunnel. However, the long road to completion ran through unprecedented difficulty.

The series of difficult construction work, particularly for the excavation of the undersea portion, included four separate cases of major infiltration by water that threatened to submerge the tunnel. However, the strenuous efforts of everyone involved in the construction resulted in the commencement of conventional line service in 1988. The new technology developed for this construction made major contributions to the progress of tunneling methods for subsequent undersea tunnels as well as tunnels through mountains and in urban areas.

The Seikan Tunnel is the only land-based connection between the islands of Honshu and Hokkaido, and its importance has only increased since the opening of the Hokkaido Shinkansen between Shin-Aomori and Shin-Hakodate-Hokuto, which was the true objective of constructing the tunnel, 27 years after it first opened.



Excavation during construction

2. Renovation Projects

Train fire detection equipment

Pump for discharging spring water in the tunnel

Overview

The Seikan Tunnel has facilities required for train operation and disaster risk reduction equipment required as safety measures for the tunnel and train operation. These facilities have deteriorated due to the passage of time, and the results of surveys conducted 10 years after the tunnel opening were used as the basis to begin repair construction to preserve tunnel functions in FY 1999.

To date, we have performed repair work on drainage facilities such as pumps installed throughout the tunnel, and on train fire detection equipment and other fire prevention facilities.

Project Research

Surveys conducted by JRTT

JRTT provides a wide array of services, from general research in the conceptual stage to detailed research in the implementation stage and more. We also use our abundant experience to conduct government-financed research and other surveys at the request of local governments and operators. Our surveys are:

Appropriate and based on reliable technical capacity

We conduct appropriate technical investigations and proposals backed by technical capacity cultivated from a wealth of railway construction.

Based on appropriate plans

Our investigations and proposals are based on appropriate plans that take full advantage of our abundant survey experience.

Unbiased

As a public institution, we conduct highly objective, reliable surveys.

Detailed and tailored to site conditions

Our regional branches cover the entire country to enable us to conduct surveys and provide assistance appropriately and when needed.

General Flow of Project Surveys

Full understanding of needs
- Full understanding of railway development needs and national/local government plans

Basic surveys
- Traffic condition surveys, organization of conditions, etc.
- Full understanding of overall transportation demand
- Organization of the significance, relevance and urgency of routes
- Investigation of application plans

Investigation of general route
- Survey/organization of route investigation conditions, comparison of multiple routes
- Estimation of overall project cost
- Estimation of transportation demand, investigation of operation plans

Determination of general route
- Investigation of project viability, evaluation of socioeconomic effects, etc.
- Determination of routes, locations of stations and rolling stock depots, etc.

Determination regarding project implementation
- Determination of application plans
- Determination of project entities, fundraising methods

Creation of construction plans
- Implementation of geological surveys and surveying, investigation of design conditions
- Investigation of line alignment design, structure classifications and configurations
- Preliminary design of structures, etc., estimation of construction cost, project permit procedures, etc.
- Negotiation with the parties concerned, environmental impact assessment, finalization of urban planning and other procedures

Commencement of construction

*JRTT provides assistance for each of the items above.

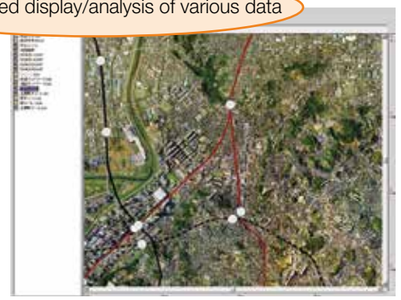
GRAPE Transportation Plan Assistance System

GIS for Railways Project Evaluation

GRAPE is a new system to assist in the development of transportation plans, namely for railways.
The system provides visual and efficient assistance for project evaluation and present-state analysis of passenger behavior.

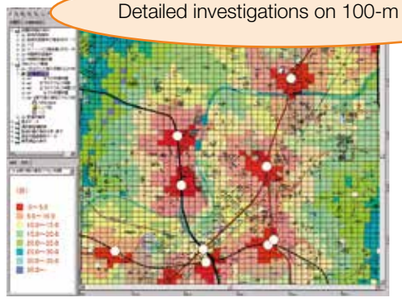
Basic Surveys/Present-State Analysis

Consolidated display/analysis of various data



Railway lines and stations overlaid on aerial photographs

Detailed investigations on 100-m grids

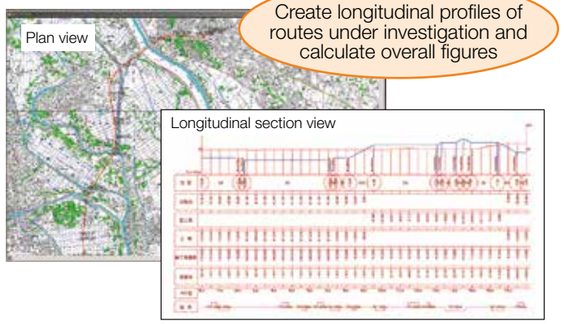


Travel times to stations

Investigation of Overall Routes, Consideration of Alternative Proposals

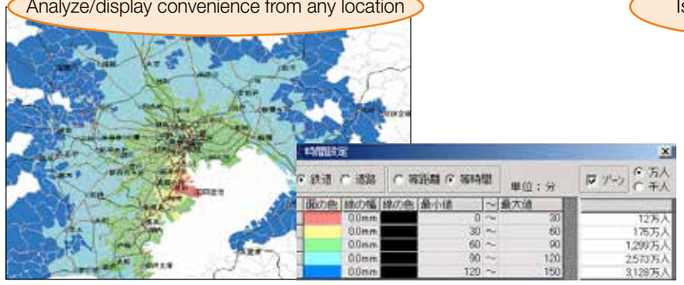
Compare levels of service between each route

Create longitudinal profiles of routes under investigation and calculate overall figures



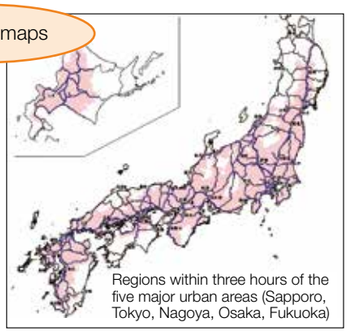
Project Evaluation

Analyze/display convenience from any location



Isochrone map search of travel time to Haneda Airport, and population within each range

Isochrone maps



Regions within three hours of the five major urban areas (Sapporo, Tokyo, Nagoya, Osaka, Fukuoka)

International Affairs

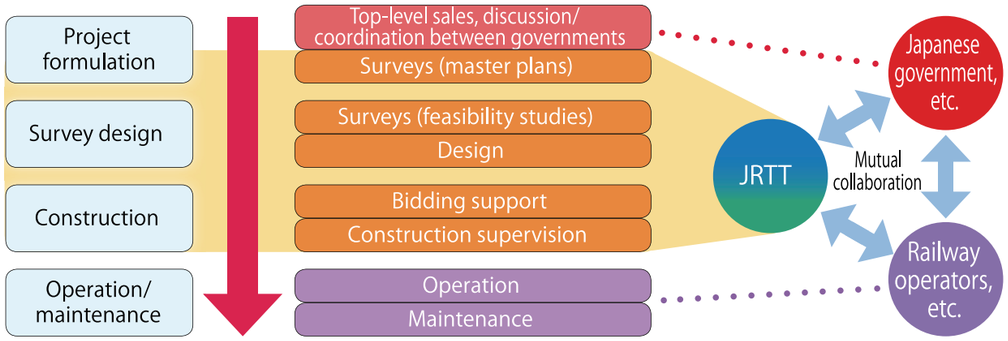
Participation in Overseas High-speed Rail Projects

Recently awareness of global environmental issues has grown and the demand for inter-and intra-city transportation has been increasing along with economic growth in developing coutries in Asia and elsewhere. Therefore,expectations of railways have increased as an excellent mass transit system with a small environmental burden. Presently, many railway projects are being planned and investigated throughout the world, and the railway market is projected to expand to roughly 24 trillion yen by 2021.

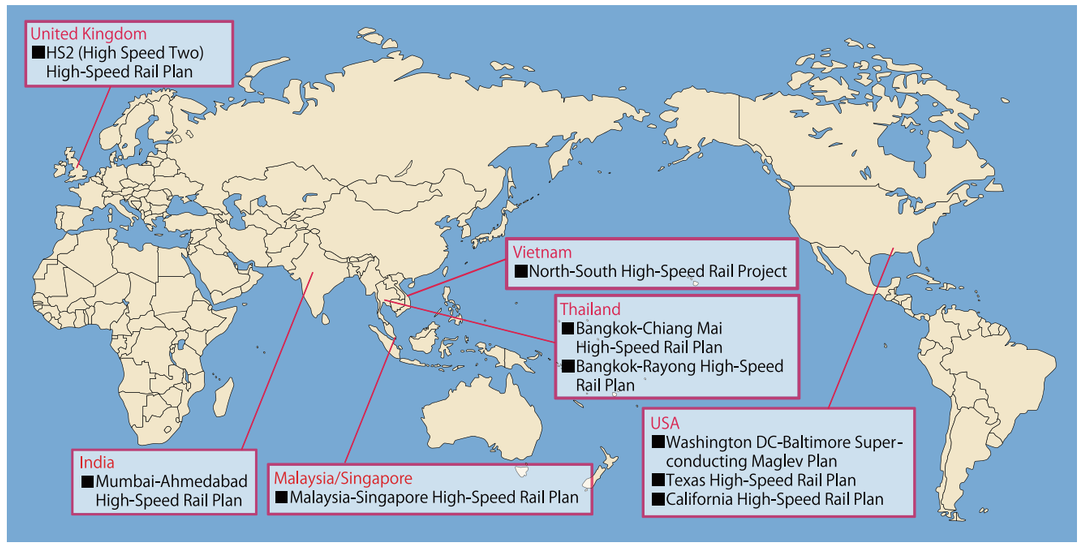
However, the construction of high-speed rail requires concerted efforts in construction work for civil engineering, buildings,tracks, electricity and machinery from the investigation stage through to completion. Private companies lack the capacity to fully execute all of these functions in addition to coordinating between departments.Therefore, as JRTT is expected to play a proactive role in coordinating the construction of projected Shinkansen lines in high-speed railway projects overseas, the apanese government enacted the Act on the Promotion of the Participation of Japanese Business in Overseas Infrastructure Projects" in August 2018. This act enables JRTT to participate in high-speed rail projects all over the world.

We intend to make full use of the know-how and knowledge we have cultivated through the construction of Shinkansen and other railway lines to date to help build the transportation networks of tomorrow both inside and outside Japan.

Main roles of JRTT



Prominent High-Speed Rail Projects



High-speed rail projects extracted from "Action Plan 2018 of MLIT for the Overseas Expansion of Infrastructure Systems" (March 2018)

Overseas Technical Cooperation

Since 1964, JRTT has contributed to build railways all over the world by dispatching many railway experts based on requests from MLIT and others. To date, we have dispatched more than 2,000 experts to a total of 70 countries and regions. We have also accepted fellows and review missions from overseas, and have explained Japan's advanced railway technology to over 4,000 fellows and others from 100 countries and regions.

Specific Efforts in Overseas Technical Cooperation

Taiwan High Speed Rail Project

Technical cooperation for track/electrical construction on Taiwan High Speed Rail

The opening of the Taiwan High Speed Rail in 2006 marked the first time Japan exported its Shinkansen system. JRTT dispatched employees and cooperated with the project from the planning stages in 1989. Specifically, our cooperation started with the participation of our employees in the feasibility study during the investigation stage, and continued into the bidding stage where we provided recommendations and close investigations of written proposals in technical terms. After the decision was made to introduce the Shinkansen system, we dispatched many of our employees who specialized in the core systems of tracks and electricity as long-term experts, and provided technical cooperation during the construction stage and for comprehensive testing prior to opening. We believe this project is both a successful example of the export of the Japanese Shinkansen system, and a successful example of our comprehensive railway construction technology and know-how amassed in Japan and put to work overseas from the planning stage until the line opened.

India High-Speed Rail Project

A field survey for the high-speed rail in India

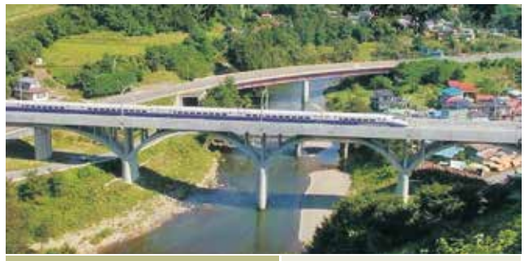
At a meeting between heads of state in December 2015, the governments of Japan and India concluded a memorandum of understanding regarding the introduction of a Shinkansen system; the two governments decided that India's high-speed rail between Mumbai and Ahmedabad would be a Japanese Shinkansen. JRTT has cooperated proactively with the project by dispatching railway experts since the feasibility study during the investigation stage. As the project progresses toward the opening of the line, our employees are on dispatch as comprehensive railway advisors to High Speed Rail Corporation of India Limited, the project entity. In Japan, we have accepted fellows from India, and given them tours of Shinkansen construction sites to help them further their understanding of safety in construction.

Technology Exchange with Sweden

As interest in high-speed rail grows in Sweden, the Japanese MLIT and Swedish ministry of industry concluded a memorandum of understanding regarding cooperation in the railway sector. Based on this memorandum, JRTT has engaged in technical exchange regarding high-speed rail with the Swedish Transport Agency since 2013. The technical exchange involves efforts such as participating in working groups regarding high-speed rail and having our employees serve as lecturers at various seminars, and we introduce Japanese railway technology to Sweden while we learn about Swedish railway technology. We have also accepted fellows from Sweden, and have deepened our exchange through efforts such as tours of Shinkansen construction sites.

Railway Construction Technology

Bridge Construction Technology



No. 3 Mabechi-gawa Bridge on the Tohoku Shinkansen

This five-span, continuous reinforced concrete arch bridge strikes a fine balance between the elegant appearance of the structure and the scenery of the surrounding area.

Haipesawa Bridge (GRS-integrated bridge) on the Sanriku Railway Kita-Rias Line

A bridge in which the superstructure is integrated into the reinforced earth abutments.
This structure should stand firm against tsunami waves because it has no support members.
(The technology won the Japan Society of Civil Engineers Tanaka Award and the Japanese Geotechnical Society Technical Excellence Award)

Inbanuma Cutoff Channel Bridge on the Narita New Rapid Line

A two-span, continuous through truss bridge. The lightweight concrete deck slabs that connect the through trusses give the bridge a lean, slim appearance that blends in nicely with the surrounding environment.

Sannai-Maruyama Over-road Bridge on the Tohoku Shinkansen

The 150-m spans are the longest on any Shinkansen bridges, and the ingenious design controls the deflection that often accompanies longer spans, providing safer, more comfortable passage of Shinkansen trains.
(The technology won an award from the Japan Prestressed Concrete Institute)

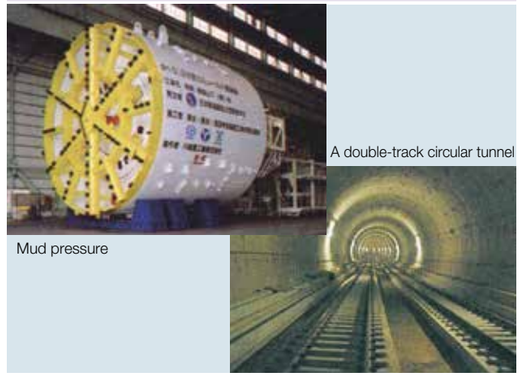
Tunnel Excavation Technology

New Austrian Tunneling Method (NATM)

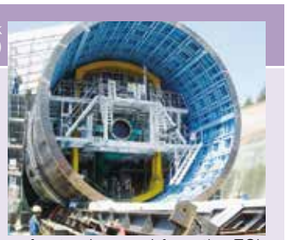
An excavation method that allows tunneling of the ground by enhancing the stability of the ground, and that is compatible with a wide range of ground types and used in tunnels through urban areas and mountains with limited ground cover.

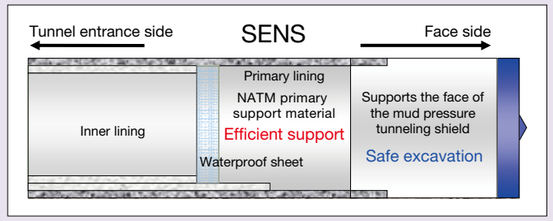
Shield tunneling method

A method in which a tunneling shield is used to bore through the earth while installing concrete panels and the like to create the finished tunnel shape.



SENS
(Cast-in-Place Pile Support System based on the Shield Method)


Inner formwork
(viewed from behind the shield)

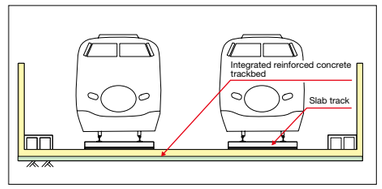


SENS stands for Shield ECL NATM System. It is a new tunnel construction system that combines the advantages of several methods. The stability of the tunneling shield from the Shield Method is combined with the rapid closure of natural ground from the ECL Method and the primary support from NATM.
(The technology won the Japan Society of Civil Engineers Outstanding Civil Engineering Achievement Award, and the Japan Industry and Technology Award Judging Committee's Special Award)

Trackbed Structure for Slab Tracks

New Trackbed Structure for Slab Tracks

For slab tracks, which are the basic structure of Shinkansen tracks, it is difficult to employ the use of conventional structures made of earth, such as cut earth or embankments, due to subsidence and other disadvantages.
However, we conducted surveys, research and tests to develop an economical new trackbed structure capable of supporting slab tracks.
(The technology won the Japan Society of Civil Engineers Technological Development Award)



Railway Construction Technology

Shinkansen Track Structure

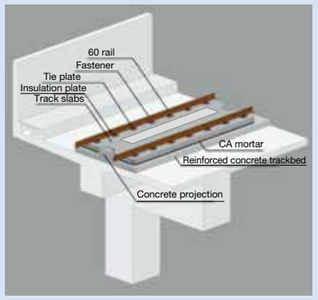
Slab tracks are employed as the basic structure of Projected Shinkansen Lines.

The structure of slab tracks supports high-speed Shinkansen operation in that it is easier to maintain than that of ballasted tracks.

Slab tracks comprise flat slabs and frame-shaped track slabs. The economical frame shaped slabs were used inside tunnels and warm areas.
(The technology won the Japan Society of Civil Engineers Outstanding Civil Engineering Achievement Award)

Flat track slabs (Tohoku Shinkansen)

Frame-shaped track slabs (Kyushu Shinkansen)



Overview of Slab Track

Local Line Track Structure

[Track Structure on Urban Railways]

Tracks on urban railways must blend in with surrounding environments. In recent years, we have used tracks with directly fastened elastic sleepers, which have the effect of damping vibration.

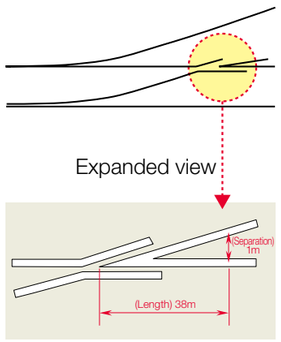
The structure of tracks with directly fastened elastic sleepers supports safe urban railway transportation in that it is easier to maintain than that of ballasted tracks.

Tracks with directly fastened elastic sleepers (Narita Rapid Rail Access Line)

The Fastest High-Speed Switches in Japan

We developed the No. 38 Switch (the “38” refers to the roughly 38 meter length of track required to achieve separation of 1 meter) to enable Shinkansen trains to travel on the switch side at the high speed of 160 km/h, and installed it where the Hokuriku Shinkansen (from Takasaki to Nagano) diverges from the Joetsu Shinkansen.

We have also installed the No. 38 Switch on the Narita Rapid Rail Access Line.
(The technology won the Japan Society of Civil Engineers Outstanding Civil Engineering Achievement Award)



Enabling Safe Transportation in Winter

We have installed various facilities to prevent damage from snow on railways in regions that experience heavy snowfall during the winter, and these facilities, which include sprinklers that sprinkle water on tracks to melt snow and high-speed snow removal devices that remove lumps of snow that inhibit point switching, have made major contributions to safe transportation in winter.

Snow removal sprinklers (Hokuriku Shinkansen)

High-speed snow removal device (Hokuriku Shinkansen)

User-Friendly Station Facilities

We have installed platform edge doors, elevators, escalators and other facilities to enable everyone to move safely and smoothly through station buildings.

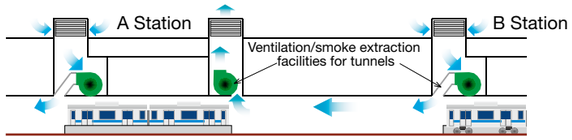
Platform edge doors (Hokuriku Shinkansen)

Escalators (Hokuriku Shinkansen)

Air Conditioning/Ventilation/Smoke Extraction Facilities in Underground Stations and Tunnels

These facilities maintain safety and comfort in underground stations and tunnels, and comprise air conditioning, ventilation and smoke extraction facilities on platforms and concourses, and station offices and the like; and ventilation and smoke extraction facilities for tunnels.

Air conditioning/ventilation/smoke extraction facilities in a underground station (Tsukuba Express Line)



Ventilation/smoke extraction facilities for tunnels (Tsukuba Express Line)

Equipment of Rolling Stock Depots for Maintaining the Safety of Rolling Stock

Rolling stock depots contain equipment that inspect, repair and wash rolling stock to enable the provision of safe, comfortable train cars for passengers.

Emergency repair equipment (Hokuriku Shinkansen)

Machinery for Railway Construction

We have developed and introduced special machinery specifically for railways, which we use to install rails during track construction and to install overhead wires during electrical construction. This machinery enables us to perform construction work safely and efficiently.

Rail feeder car

Overhead wire operation car (left rear) and overhead wire drawing car (right front)

Railway Construction Technology

Symbolic Stations that Harmonize with Surrounding Communities

JRTT uses public comments and otherwise solicits opinions directly from local communities as to what kinds of stations they want, and works together with local communities to create those stations, which capture the identity of the community, reflect the local scenery, natural characteristics and culture, or serve as symbols or landmarks.

Shin-Hakodate-Hokuto Station on the Hokkaido Shinkansen (between Shin-Aomori and Shin-Hakodate-Hokuto Stations), opened in March 2016

Kurobe-Unazukionsen Station on the Hokuriku Shinkansen (between Nagano and Kanazawa Stations), opened in March 2015

Safe, Comfortable and User-Friendly

We use the principles of universal design to construct stations that are safe and secure for people of all ages and abilities.

Shin-Tosu Station on the Kyushu Shinkansen (between Hakata and Shin-Yatsushiro)
A tour of the station for people with disabilities. The elevator in the rear is see-through to prevent crime

Multifunction restroom (Toyama Station and others)
With a variety of functions, this toilet is extremely convenient for passengers.

Shin-Tosu Station on the Kyushu Shinkansen (between Hakata and Shin-Yatsushiro)
Easy navigation provided by facilities such as braille signs and platform edge doors, which increase safety on platforms

Kanazawa Station on the Hokuriku Shinkansen (between Nagano and Kanazawa)
Regular automatic ticket gates, wide automatic ticket gates, and a ticket counter

Eco-Friendly Stations

We proactively undertake measures to combat global warming and other measures to improve the natural environment in our construction of station buildings, rolling stock depot buildings and other railway structures.

Shin-Tamana Station on the Kyushu Shinkansen (between Hakata and Shin-Yatsushiro Stations)
Platform roof constructed from locally sourced wood

Kumamoto General Rail Yard on the Kyushu Shinkansen (between Hakata and Shin-Yatsushiro Stations)
Solar water heaters, natural ventilation systems, green roofs and other efforts

Use of domestic wood

Using locally sourced wood is an eco-friendly solution that fixes carbon dioxide and conserves transportation energy. The use of wood for station building interiors creates pleasing atmospheres with a sense of warmth. We received the Kumamoto Local Materials Promotion Association Award for our work on Shin-Tamana Station.

Use of natural energy

We proactively consider ways to use sunlight; solar heat; natural wind, which does not require power, for ventilation; and other natural energy, and incorporate it into the construction of station buildings and the like where appropriate.

Green roofs and railway property greening

We plant trees and undertake other greening efforts on the roofs of buildings and on railway properties to counter the heat island effect and combat global warming.

Use of products made with recycled materials

We use tiles created from stones, bricks, ceramics, roof tiles and other leftover materials from construction sites, and other products that are eco-friendly in that they reduce trash and effectively use resources.

Narita Rapid Rail Access Line
Narita Yukawa Station
Use of “Eco-heiban” tiles

Stations that Strike a Balance between Economic Efficiency and Good Design

We developed our patented Hybrid Structure, which integrates civil engineering structures and architectural structures to reduce work schedules and costs and improve freedom of design. We have employed the Hybrid Structure on many railway lines.

☐ We changed the conventional four-pillar viaduct structure to a two-pillar structure, incorporating the pillars on each side into the roof to open up more options for the layout of concourses, escalators, elevators and other station facilities.

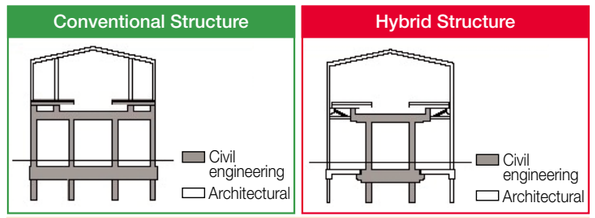


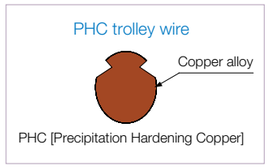
Diagram of Conventional and Hybrid Structures

Shin-Tamana Station on the Kyushu Shinkansen
The architectural exterior completely covers the civil engineering structure.

Railway Construction Technology

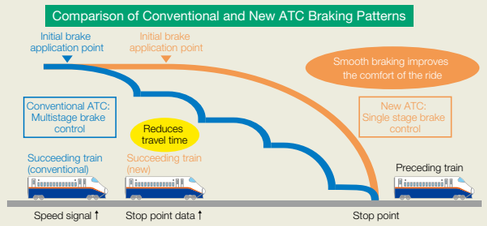
Economical Overhead Wires with Outstanding High-Speed Performance

We put PHC trolley wires into practical use as economical, simple overhead lines for the high-speed operation of the Projected Shinkansen lines. PHC trolley wires are well suited for the Projected Shinkansen lines because they are lightweight and have high tensile strength, are made of a precipitation hardening copper alloy, which is oxygen-free copper with chromium, zirconium and other additives, and have excellent electroconductivity among trolley wires for high-speed operation.



New Train Control System

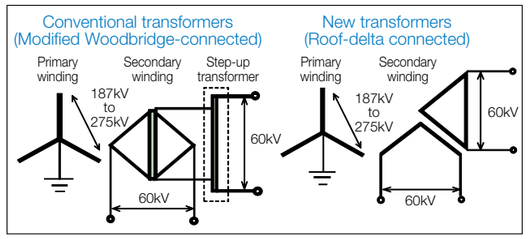
To improve the comfort of the ride and shorten operation times and intervals on the Tohoku Shinkansen between Hachinohe and Shin-Aomori Stations, we used the car-initiated ATC that we introduced on the Tohoku Shinkansen between Morioka and Hachinohe Stations to create a fully jointless track circuit—the first of its kind on a Shinkansen line—in an effort to simplify both facilities near the tracks and maintenance. To further spread the application of these effects, we also developed the technology so that it is applicable in the section of the Hokkaido Shinkansen between Shin-Aomori and Shin-Hakodate-Hokuto Stations where the Shinkansen and local lines run side by side, and we introduced an ATC for a three-rail system compatible with both the Shinkansen and local lines.



Eco-Friendly Roof-Delta Connected Transformers

We put roof-delta connected transformers to practical use as alternating current feeding transformers for supervoltage power reception on Shinkansen lines to replace conventional modified Woodbridge-connected transformers, and began using the new transformers.

Compared to conventional transformers, the new transformers have a simpler structure and are smaller and more lightweight, which prevents the loss of electricity and is more environmentally friendly.



Shin-Hakodate Transformer Substation

Awards

JRTT has received many awards from domestic and foreign organizations alike for the technology we have used in railway development projects and railway construction to date.

Awards for Railway Development Projects

(1) Projected Shinkansen Lines

Construction of the Hokuriku Shinkansen between Nagano and Kanazawa
2015 Japan Society of Civil Engineers Outstanding Civil Engineering Achievement Award
Japan Railway Award (Railway Day Executive Committee)

Construction of the Hokkaido Shinkansen between Shin-Aomori and Shin-Hakodate-Hokuto
2016 Japan Society of Civil Engineers Outstanding Civil Engineering Achievement Award

(2) Urban Railways, Assistance for Restoration after the Great East Japan Earthquake

Construction of the Narita Rapid Rail Access Line
2010 Japan Society of Civil Engineers Outstanding Civil Engineering Achievement Award
Japan Railway Award (Railway Day Executive Committee)

Restoration of Sanriku Railway lines damaged in the Great East Japan Earthquake
2014 Japan Society of Civil Engineers Outstanding Civil Engineering Achievement Award
2014 Technology Award, Japan Railway Civil Engineering Association
2014 Zenken Award, Japan Construction Engineers' Association

Awards for Railway Construction Technology

High-speed excavation using SENS, a method on the frontier of the Bedrock Tunneling Method and the Shield Method
2012 Japan Society of Civil Engineers Outstanding Civil Engineering Achievement Award

Use of verification/evaluation of durability to confirm the health of the Seikan Tunnel
2013 Japan Society of Civil Engineers Outstanding Civil Engineering Achievement Award

Haipesawa Bridge, Sanriku Railway
2014 Japan Society of Civil Engineers Tanaka Award

Awards

Architecture

Shin-Yatsushiro Station, Kyushu Shinkansen
2011 Brunel Award (for Design Excellence)
2011 Station Structure Award, Association of Railway Architects

Toyama Station, Hokuriku Shinkansen
2015 Ministry of Transport Railway Bureau Chief Award, Association of Railway Architects

Electrical Equipment

Development and Practical Application of Jointless DS-ATC for Projected Shinkansen Lines
2016 Electrical Science and Engineering Promotion Award (Ohm Award)

Lighting at Shin-Hakodate-Hokuto Station on the Hokkaido Shinkansen
2016 Hokkaido Most Outstanding Lighting Technology Award, The Illuminating Engineering Institute of Japan

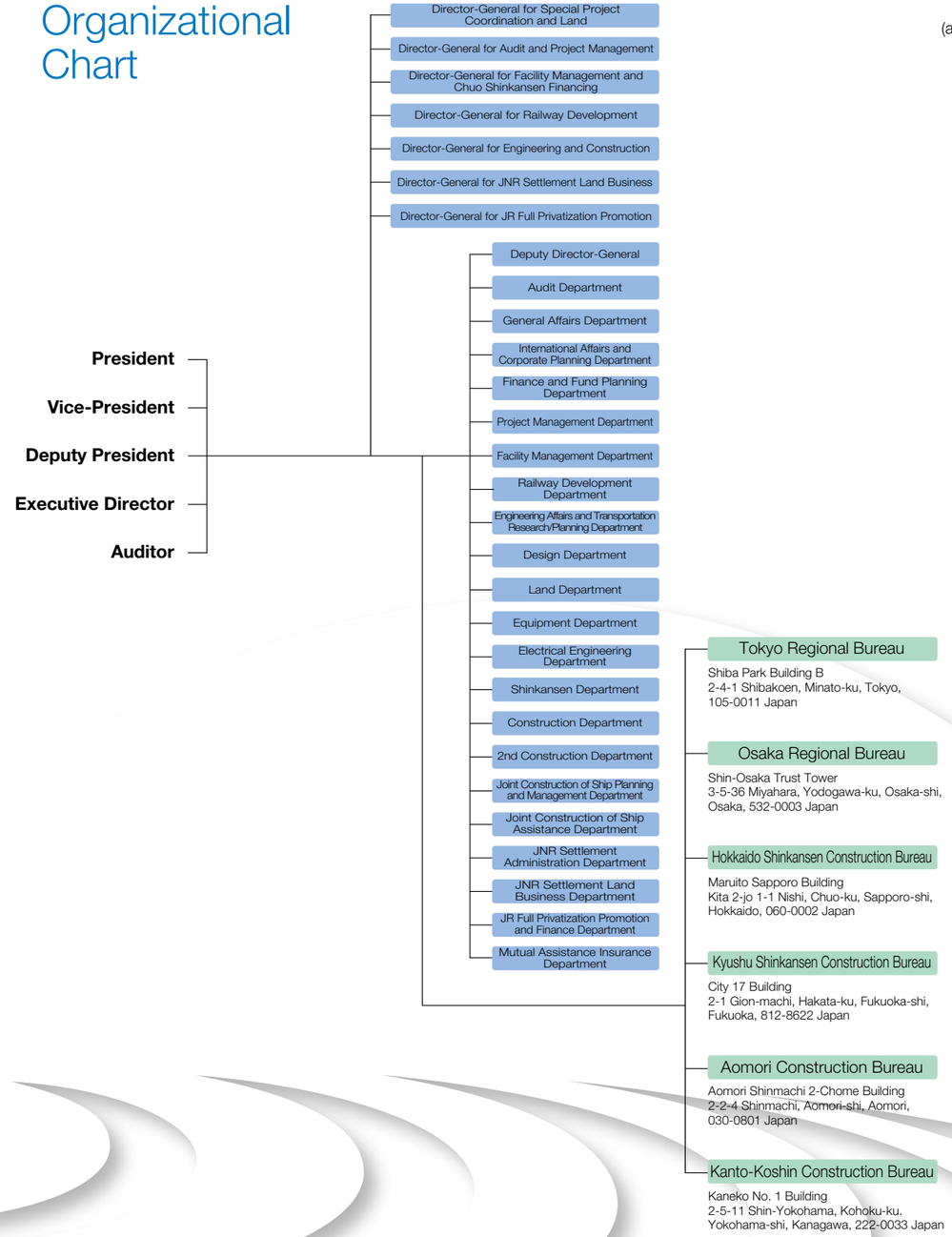
Other

Seikan Tunnel ■ Keiyo Line ■ Joetsu Shinkansen
Hokuriku Shinkansen ■ Toyo Rapid Railway ■ Rinkai Line
Hokuso Line ■ JR Tozai Line ■ Sendai Airport Line
Aichi Loop Line ■ Chizu Express Line
Yamanashi Maglev Test Line and others

JRTT has won many awards for the railways it has constructed, both recently and since the days of the former Japan Railway Construction Public Corporation.

Organizational Chart

(as of April 1, 2018)



Japan Railway Construction, Transport and Technology Agency (JRTT)

Headquarters:
Yokohama I-Land Tower
6-50-1 Honcho, Naka-ku, Yokohama-shi,
Kanagawa, 231-8315 Japan
Tel: +81-45-222-9101 (Japanese only)
(Public Relations Division)

Website URL

http://www.jrtt.go.jp