

JAPANESE
R E A L
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T O D A Y





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Introduction

After World War II, Japan faced many different problems arising from urbanization in the process of its economic growth. These included a housing shortage, traffic congestion and environmental issues. It has resolved these problems through urban development, accumulating a great deal of experience and expertise in the process.

Particularly in terms of addressing the housing shortage and traffic congestion in cities, Japan undertook the development of new towns in suburban areas and urban development in combination with public transport. In preparation for major earthquakes and other disasters, it has been working to make cities more resilient through redevelopment and by introducing advanced construction technologies. Amid the recently growing trend toward a low-carbon and environment-oriented society, efforts to reduce energy consumption in cities and buildings are being made through the development of smart cities and environmentally friendly construction.

This booklet presents Japan's experience in urban development centered on these efforts by taking a look at leading projects in Japan and overseas.

Japanese real estate operators engage in urban development outside Japan with the use of the experience and expertise they have cultivated. They are able to offer a broad array of solutions to countries and cities facing issues related to urbanization.

It will be our pleasure if Japan's experience is helpful in the implementation of urban development projects in countries troubled by urban issues.

Otemachi- Marunouchi- Yurakucho District

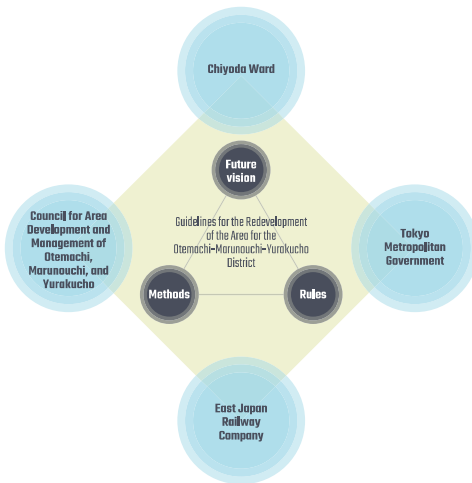
The Otemachi-Marunouchi-Yurakucho District (hereafter, the "Marunouchi Area") is located between Tokyo Station and the Imperial Palace.

Marunouchi Area seen from the Yamanote side of JR Tokyo Station



This area, which is about 120 hectares in size, is Japan's leading business district, where about 280,000 people work for approximately 4,300 companies in approximately 100 buildings.

The first stage of the project involved rebuilding six buildings around Tokyo Station, which commenced with the Marunouchi Building completed in 2002, and renewing the functions of Marunouchi Naka Dori Avenue. The project is now in the second stage, which aims to further expand and deepen the Marunouchi Redevelopment Project and spread the effect of the project to the entire Marunouchi Area. The goal of this project is to develop this area into a town that harmonizes everything dynamically and creates new value to create a global business center that will continue to be selected by people around the world with the key concept of Dynamic Harmony, which consists of five concepts for urban development (openness, network, interactivity, diversity and sustainability).



The Guidelines have been formulated by the Council for Area Development and Management of Otemachi, Marunouchi and Yurakucho together with local authorities and railway companies.

Creating a town filled with attractive elements by promoting sustainable development based on public-private partnership

Agreements reached by the Redevelopment Project Council, where government and private sectors discuss the future of the district freely, have been institutionalized by the government and realized by the private sector through businesses. This has enabled advanced projects, including the transfer of the development rights of the Tokyo Station building.

The Council has also created Guidelines for the Redevelopment of the Area and continues to update these guidelines in response to the social situation and environmental changes.

Name of district	Otemachi-Marunouchi-Yurakucho District (Marunouchi Area)
Development area	Approx. 120 hectares
Facilities	101 buildings with approx. 4,300 companies plus hotels, art museums, halls, and meeting facilities
Project implementing body	Mitsubishi Estate Co., Ltd. and others
History	The urban development of the area around Tokyo Station has been undertaken, starting with the completion of the Mitsubishi Ichigokan building (below left) in 1894.



The first office building in Marunouchi has been reconstructed as Marunouchi Park Building and Mitsubishi Ichigokan Museum.



CHANGES TO MARUNOUCHI NAKA DORI AVENUE

top: photograph of the avenue taken in 1960;

bottom: photograph of the same avenue taken in 2014

THE UTILIZATION OF PUBLIC SPACES IS UNDERWAY MAINLY ON GYOKO DORI AVENUE AND MARUNOUCHI NAKA DORI AVENUE.

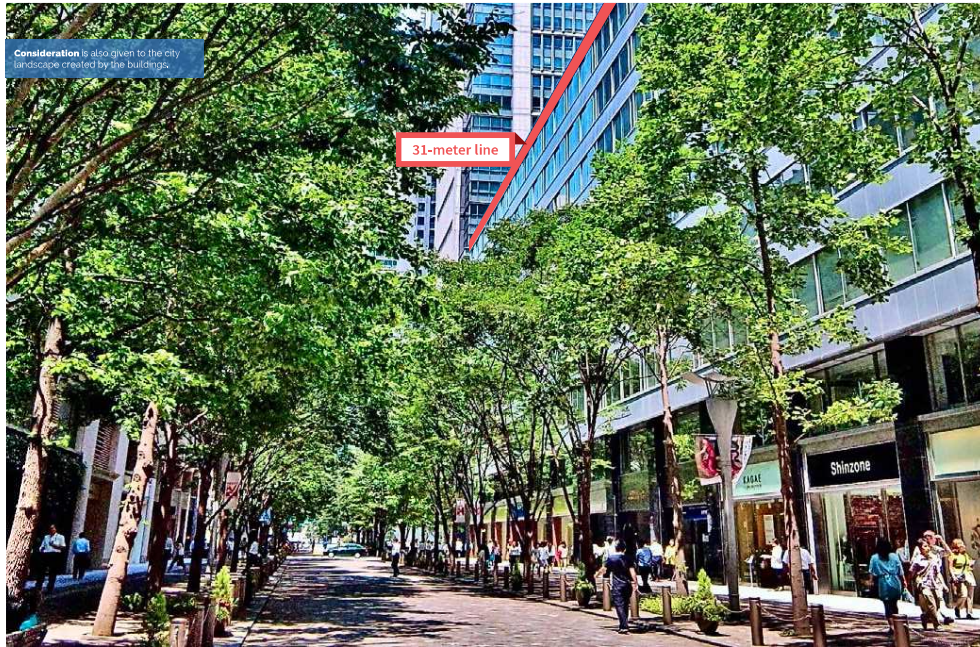
Aimed at achieving the enhanced use of street spaces, this area management project has created a bustling street, encouraging people to gather and enjoy themselves. It is working to stimulate meeting, incentive, convention, and exhibition (MICE) functions as well as urban tourism.



A tourist event: JAPAN NIGHT on Gyoko Dori Avenue

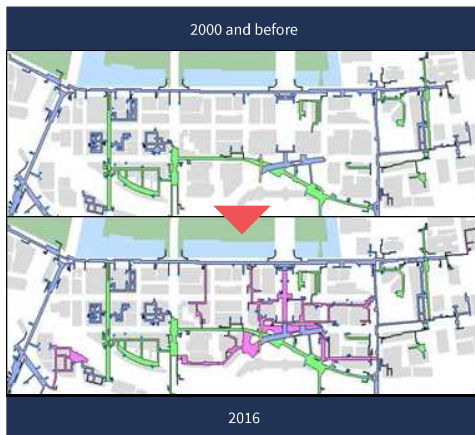
A music event: Ensembles Tokyo on Gyoko Dori Avenue

An open cafe on the roadway: Urban Terrace on Marunouchi Naka Dori Avenue

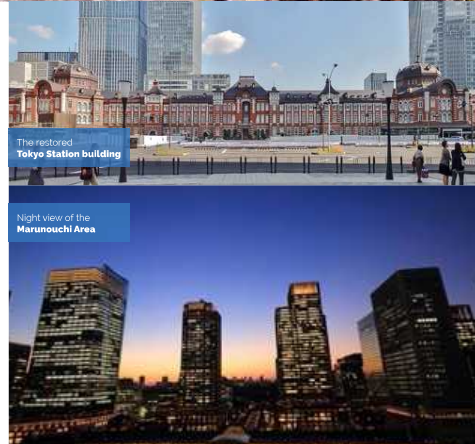


The unused development rights of the restored Tokyo Station building have been transferred to make both the building and the surrounding buildings look attractive.

In order to create a united and integrated city landscape, the previous height limit of 31 meters was also applied to the redeveloped building.



<Development of the underground network>
Based on the future vision drawn in the Guidelines for the Redevelopment of the Area, the network of underground walkways is expanded each time a redevelopment project is implemented. As a result, a comfortable network of walkways has been developed.



The restored Tokyo Station building

Night view of the Marunouchi Area



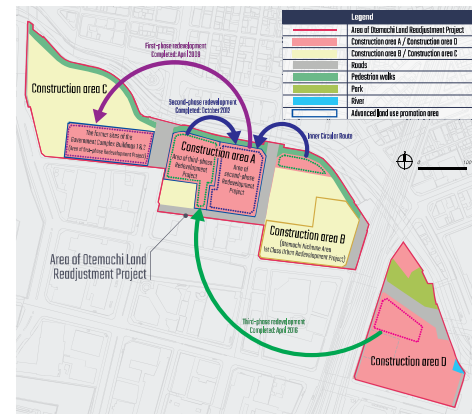
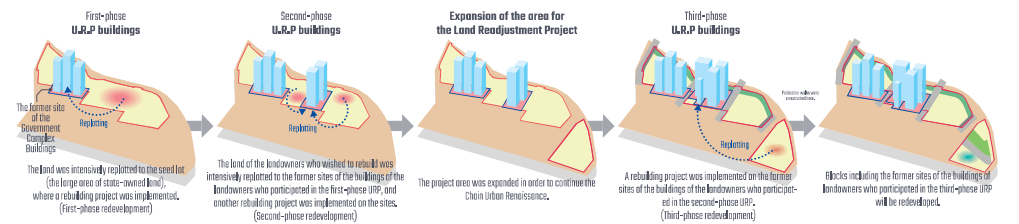
Chain Urban Renaissance Project (U.R.P) in Otemachi

Sequential reconstruction of aged buildings, which is carried out without suspending business activities

The Otemachi area plays the central role in the Japanese economy. At present, a project aimed at redeveloping this area as a strategic site for global business is in progress. In this project, aged buildings are reconstructed sequentially by transferring the rights to the land elsewhere, using a large area of state-owned land as the seed lot.

Ten years after the commencement of this long-term, 24-year Land Readjustment Project (L.R.P), redeveloped buildings with a total floor area of more than 1,000,000 square meters have already begun operating.

PROGRESS OF THE CHAIN URBAN RENAISSANCE



Name of district	Area of Otemachi Land Readjustment Project
Development area	Approx. 17.4 hectares
Facilities	Offices, hotels, and others
Project implementing body	Urban Renaissance Agency and others
Schedule	<ul style="list-style-type: none"> Jan. 2003: Authorization of the Urban Renaissance Project Apr. 2006: Approval of the Land Readjustment Project Apr. 2007: Commencement of work for the first-phase redevelopment (Completed in Apr. 2009) Apr. 2010: Commencement of work for the second-phase redevelopment (Completed in Oct. 2012) Apr. 2014: Commencement of work for the third-phase redevelopment (Completed in Apr. 2016) Apr. 2017: Commencement of work for the fourth-phase redevelopment (scheduled)

TOD Urban Development in Japan

Implementation of various environmental initiatives for future generations

In an urban development project like transit-oriented development (TOD), offices, residences, and other facilities are located within walking distance from a train station, thereby enabling people to be less dependent on automobiles. This results in an environmentally friendly city with reduced CO2 emissions, the concentration of urban services in the area around the station, which improves convenience, and a barrier-free city that is friendly to children, elderly people, and people who have difficulty moving around.

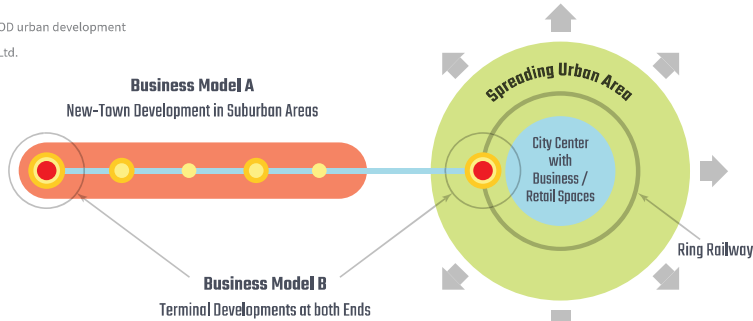
A TOD-based urban development project combines two urban development models to achieve significant effects resulting from individual projects. One is Business Model A, in which urban functions such as commercial activities and

operations are concentrated in a city center with numerous incoming and outgoing passengers, or in a suburban hub station. The other is Business Model B, in which the construction of a railway linking the hub stations and the urban development of the area along the railway are implemented in an integrated manner (see figure below).

In Japan, a private railway company in the Kansai area commenced railway construction and residential land development in an integrated manner in the early 1900s. It later established a TOD-based business model for private railway management by combining the above project with a leisure resort development in the suburbs and terminal development in the city center. This private railway business model flourished in Tokyo and the Nagoya urban area as well due to the strong housing demand during the post-war period of high economic growth.

In Tama Den-en Toshi City, a typical TOD project in Tokyo, a railway was constructed starting from Shibuya Station as the hub station. In the areas along this railway, housing development was implemented in the area within walking distance (within a radius of 750 meters/ten minutes' walk) of each station, and was then expanded over an area covered by a bus route network connected to the station. More than 50 years after the launch of the project, more than 400,000 people live in the huge residential area that covers around 5,000 hectares.

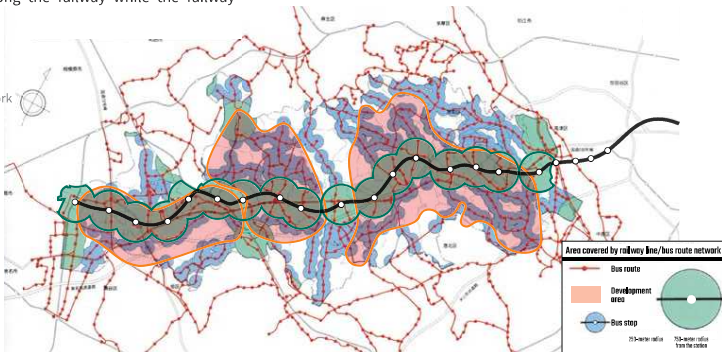
Figure 1: Business models in a TOD urban development
Source: Nikken Sekkei Ltd.



The Housing-Railway Act has enabled the integrated development of a railway and the area along the railway under the so-called two-tiered system, in which an urban development corporation and local governments develop railway facilities and implement an urban development project in an area along the railway while the railway

business operator operates the railway services. This system enables the profit from the urban development project to be used to compensate for the investment in railway development. Under this new system, the development of the Tsukuba Express Line and areas along the line has been in progress (Nikken Sekkei Research Institute).

Figure 2: Development areas of Tama Den-en-toshi City along the Railway Line and Bus Network
Source: Nikken Sekkei Ltd.



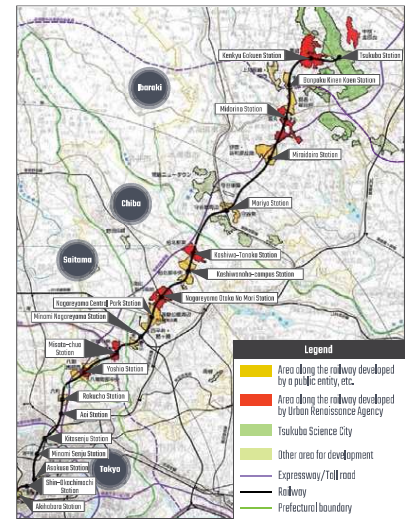
Urban Development Along the Tsukuba Express (TX) Line

In the Tsukuba Express Project, the improvement of the transportation system in the area in the northeast of the Tokyo Metropolitan Area and the urban development of areas along the railway are implemented in an integrated manner.

This railway directly links the 58 kilometers between Tsukuba Science City, an international research and academic hub, and the center of Tokyo. It is also aimed at revitalizing areas along the railway line. The number of passengers of TX, which was 230,000 at the time of its opening in fiscal 2005, continued increasing to approximately 340,000 in fiscal 2015.

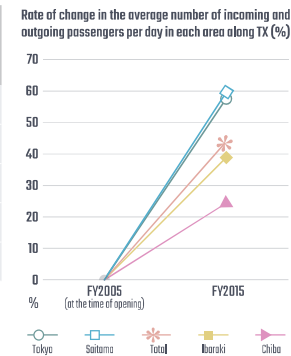


Plan to develop areas along the Tsukuba Express Line



FIGURES AND GRAPH SHOWING THE NUMBER OF INCOMING AND OUTGOING PASSENGERS IN EACH AREA ALONG TX

	FY2005 (opening)	FY2015	Rate of increase (%)
Tokyo	100,488	160,221	59
Saitama	20,200	31,697	61
Chiba	70,844	88,872	25
Ibaraki	42,394	59,352	40
Total	233,926	340,142	45



Official website of Tsukuba Express
Sources: EK-Hetetsu joshokusho source (number of incoming and outgoing passengers of each station) (Entertainment Business Institute)

KENKYU GAKUEN KATSURAGI AREA BEFORE AND AFTER THE DEVELOPMENT (IMPLEMENTED BY: URBAN RENAISSANCE AGENCY)



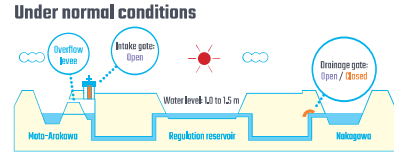
Name	Development along the Tsukuba Express Line (land readjustment project)
Development area	Approx. 3,000 hectares (21 areas)
Project implementing body	Tokyo Metropolitan Government, prefectural governments of Saitama, Chiba, and Ibaraki, Urban Renaissance Agency, and others
Project period	FY1988 to FY2024

Koshigaya Lake Town

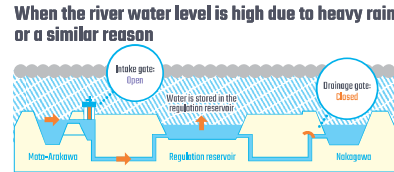
The Koshigaya Lake Town Project is Japan's first project to promote the development of a new urban area through a land readjustment project and the development of a river-regulating reservoir, etc.

That contributes to comprehensive flood control measures aiming for integration between waterfront space and urban space. A new station has been built to take advantage of the convenience of railway services. This is combined with the supply of high-quality, environmentally friendly residential plots of land that coexist in harmony with the waterfront space and measures including the attraction of commercial facilities, such as Aeon Mall, and business facilities. With the development of these public facilities and utilities, the Koshigaya Lake Town Project has resulted in the successful creation of a new urban area with a healthy, high-quality residential environment.

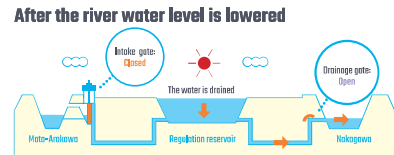
Name	Koshigaya Lake Town (land readjustment project)
Development area	225.6 hectares
Project implementing body	Urban Renaissance Agency
Project period	FY1999 to FY2018



The water level of the regulation reservoir is kept at 1.0 to 1.5 meters to secure fringe capacity for flooding. The water level is maintained by opening and closing the water purification pipe and drainage gate.



Some of the vast quantity of water that flows into the Moto-Arakawa River is stored in the regulation reservoir. This reduces the peak flow of water that causes flood damage. The regulation reservoir can store water up to a depth of 5.0 meters. The maximum amount of water is around 1.2 million cubic meters, which is equivalent in volume to about 800 50-meter swimming pools.



When the heavy rain, etc. has stopped and the water level of the Nakagawa River has been lowered, the vast quantity of water stored in the regulation reservoir is drained into the Nakagawa River to prepare for the next flood.

The entire area, including the development site, had been a riverside district with rice paddies since the Edo Period. The area was also vulnerable to flooding caused by typhoons or other phenomena.

The regulation reservoir developed in this area can temporarily store some of the water from the Moto-Arakawa River in the event of flooding, thereby curbing the rise of water level in the river and reducing flood damage to the surrounding area.

In addition, the reservoir was developed together with a new urban area in an integrated manner. This has enabled the reduction of the costs for developing the regulation reservoir, the early development of flood control facilities and the smooth procurement of sites, among other achievements, by allowing the development of water-amenity facilities for local people.



Toranomon Hills

Toranomon Hills was constructed together with the development of Loop Road No. 2, a trunk road, in an integrated manner in an urban redevelopment project implemented by the Tokyo Metropolitan Government.



The project was implemented by using the multi-level road system (a system that allows for the construction of roads and buildings in the same space). Toranomon Hills is a multi-use super high-rise that can be called a model urban redevelopment project through a private-public partnership.

It is a complex facility consisting of Andaz Tokyo, which was launched as the first Andaz hotel in Japan, high-grade residences featuring breathtaking views, offices with a total rentable area of around 100,000 square meters featuring large floor plates and top-rated specifications, one of the largest conference facilities in the area, restaurants, shops and a green open space with an area of about 6,000 square meters.

At the moment, three other high-rise buildings are planned adjacent to the facility. A composite city integrated with Tokyo Metro's Toranomon New Station (tentative) and other transport infrastructure will come into existence.

The multi-level road system creates three-dimensional road areas to allow the utilization of these areas other than the spaces necessary for road facilities. With the use of the system, Toranomon Hills' structures are constructed both above and beneath the underground tunnel to make sophisticated use of the land.



Name	Toranomon Hills
Development area	17,069 square meters
Purposes of use	Offices, residences, hotel, shops, conferences, car park
Project implementing body	Tokyo Metropolitan Government
Designated constructor	Mori Building Co., Ltd.
Construction period	Groundbreaking: April 1, 2011 Completion: May 29, 2014

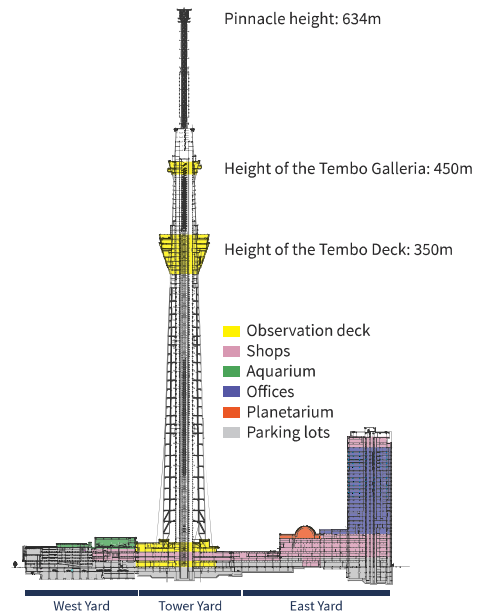


TOKYO SKYTREE TOWN®

Tokyo Skytree Town consists of the Tokyo Skytree, a new Tokyo landmark that is the world's tallest standalone communication tower at 634 meters, a commercial facility that is rich in variety with more than 300 shops, and an office building used by a large number of companies. The communication tower as an information infrastructure, economic activities in the fields of commerce, culture, and entertainment and disaster prevention performance are integrated in this urban development project, which is aimed at creating a new base that is appropriate for Tokyo in the 21st century.



FACILITIES OF TOKYO SKYTREE TOWN



Name	TOKYO SKYTREE TOWN TOKYO SKYTREE (communication tower, observation deck (Tembo Deck, Tembo Galleria), and other facilities) TOKYO Solamachi (shopping center and other facilities) TOKYO SKYTREE EAST TOWER (office building)
Development area	Approx. 36,900 square meters
Total floor area	Approx. 230,000 square meters
Facilities	Communication tower, observation deck, shops, offices, aquarium, planetarium, and others
Project implementing body	Tobu Railway Co., Ltd. Tobu Tower Skytree Co., Ltd.
History	July 2008: Groundbreaking February 2012: Completion May 2012: Opening



VIBRATION CONTROL TECHNOLOGIES UTILIZED FOR THE TOWER

(Tip vibration control and center column vibration control)

With tip vibration control, the movement of the approx. 40-ton weight and the subordinate 25-ton weight enables the wind-induced vibration of the gain tower to be reduced. The center pillar vibration control was developed based on a traditional Japanese five-storied pagoda. In this system, the center pillar (pre-stressed reinforced concrete cylinder) at the center of the tower and the main tower structure, which is made of steel, are fixed together using steel materials in the part between the base and the point 125 meters from the base (fixed part). The part between the 125-meter point and the 375-meter point is movable. The vibration of the tower is controlled by using the weight of the center pillar. This system is capable of reducing seismic vibration by up to 50% and wind-induced vibration by up to 30%.

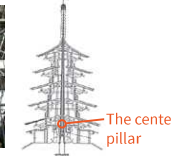
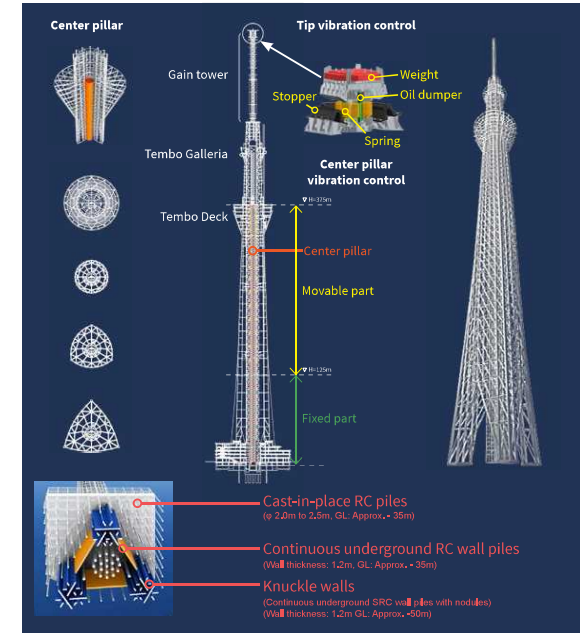


Figure 27
Five-storied pagoda and the position of its center pillar

The main tower structure made of steel (figure on right) and a joint at which steel beams are branched off (figure above/welding connection).



Advanced Building Technologies

Base Isolation Technology for Anti-Seismic Measurement

As a country that is subject to frequent earthquakes, Japan has developed advanced technologies for controlling the risks of earthquakes based on its experience of repeated disasters.

For example, the base isolation technologies shown on the right can reduce the shaking caused by an earthquake to one-half to one-fifth. They have been adopted for many well-known projects in Japan, including Tokyo Station. (Kajima Corporation)

Normal building

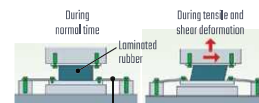


Base-Isolated building



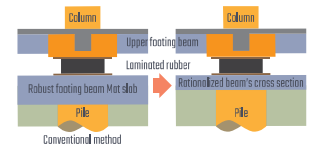
Winker Method®

Imports base isolation to high-rise and super high-rise buildings.



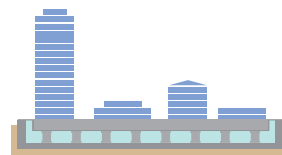
Smart Isolation Foundation Method®

Cost is lower than that of the conventional base isolation method.



Artificial Base Isolation Ground

Isolates the whole area with buildings and houses.



Earthquake Protection and Vibration Isolation

Reduces minor shaking and cuts traffic vibrations.

