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A JOURNEY THROUGH OUR FIRST 115 YEARS OF HISTORY

1900 - 2015

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NIKKEN
EXPERIENCE, INTEGRATED

NIKKEN SEKKEI 1900-2015:
A JOURNEY THROUGH OUR FIRST 115 YEARS OF HISTORY

*Summarised from the book "NIKKEN SEKKEI 1900-2015. A 115-Year Life Chronicle";
first edition published on June 1st, 2015.*

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Introduction

NIKKEN SEKKEI 1900-2015 – A 115-Year Life Chronicle

More than 115 years have passed since our foundation, and 65 years since our the restart after the war. Nikken Sekkei has developed into a professional service firm in architecture, city planning and environmental fields with 1,800 staff members, and more than 2,400 people in Nikken Group as a whole.

In modern society, it is necessary for various experts to collaborate in order to face any unpredicted issues. After the war, we started as a group of Planners / Architects / Engineers, but our professional fields had continued to deepen and expand. Nikken Group is now composed of Nikken Sekkei as the core, and 6 professional group companies over different fields.

Since its foundation, it has proceeded along with the history of Japan, developing and evolving through different eras. The 115-Year Life Chronicle of Nikken Sekkei has been conceived for those who are professionally involved in different aspect of architecture and for those who are interested in architecture and cities in general.

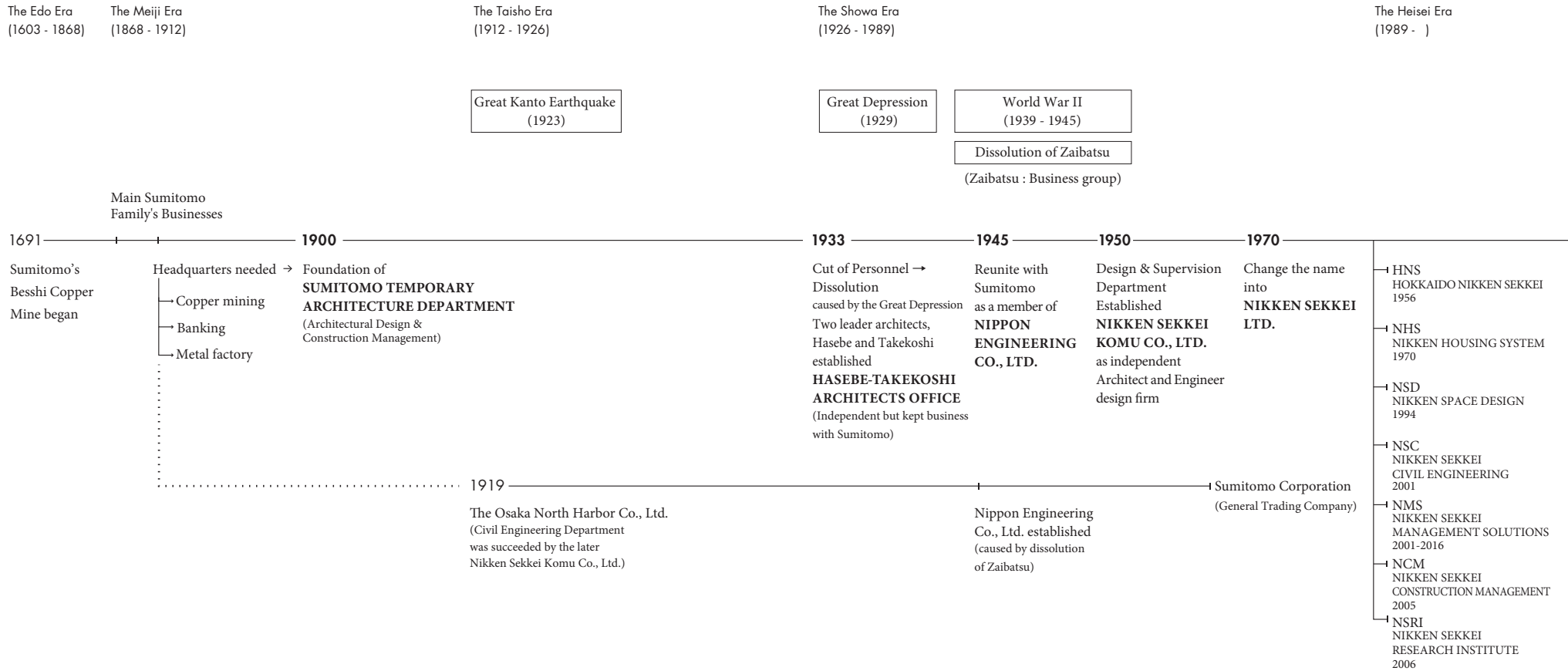
2015 spring.

Nikken Sekkei Ltd.,

Chairman, Keiichi Okamoto

**Keiichi Okamoto, Nikken Sekkei Ltd. Chairman until 2016.*

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1 The Rising of an Era

1868 – 1912

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The Meiji Era

On the wave of the industrial revolution, Japan's Meiji era opened the door to the modernization of the country, bringing new energy to industries and companies able to understand and take advantage of Western technologies. One family in particular, the Sumitomo Family, gained fortune from the copper business - copper that was mined from the Besshi Mines, property of the family - and their secondary banking business in Japan.

As business grew, the necessity of having headquarters for these two activities prompted the foundation of a temporary architecture department under the guidance of one of the Sumitomo descendants: Tomoito "Shunsui" Sumitomo.



住友友純
Tomoito Sumitomo
(1865-1926)

1-1

Tomoito Sumitomo had the money, the style and the right acumen in conducting and delegating business; which most certainly included the ability to choose the suitable person for every specific department. When it came to the Sumitomo Temporary Architecture Department, it was the matching of two talented architects that made the difference: Noguchi and Hidaka, who both mastered the artistic, aesthetic and engineering aspects of the company.

The first projects included: Osaka Library, Sumitomo Family Suma Villa, Sumitomo Temporary General Head Office, and Sumitomo Bank branches throughout the country and more.



1-2 The 26 members of Sumitomo Head Office Temporary Architecture Department. Magoichi Noguchi is third from the left, front line.



野口孫市
Magoichi Noguchi
(1869-1915)

1-3



日高胖
Yutaka Hidaka
(1875-1952)

1-4

別子銅山

Besshi Copper Mines



1-5 1874 *Painting of the Besshi Copper Mines* by Soseki Murase. Sumitomo Historical Archives' reference-collection.

We can see the Setouchi Inland Sea in the above portion of the painting.



1-5

住友家須磨別邸 Sumitomo Family's Suma Villa

In 1900, Shunsui Sumitomo ordered Magoichi Noguchi to launch the design of the Sumitomo Family Suma Villa and the Osaka Library. The Sumitomo Family's Suma Villa was an elegant residence built following Victorian Colonial style in the scenic landscape of Suma.



1-6

- 1-6 Suma Villa's existing stone pier gate.
- 1-7 Suma Villa's hall.
- 1-8 Sumitomo Villa's external view of the existing stone retaining wall.
- 1-9 Sumitomo Family's Suma Villa (1903). The Southern outward view from Suma beach.



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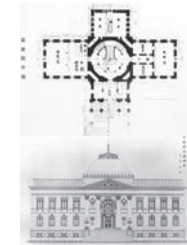
大阪図書館 Osaka Library

Shunsui Sumitomo also decided to endow the library to Osaka Prefecture as a social contribution. Noguchi understood the essence of Western classic architecture and adopted the Italian Renaissance Palladian style to the design of the library.



1-10

- 1-10 Extension completed in 1922.
- 1-11 Plan and elevation drawing inspired by Andrea Palladio's Vicenza Villas.
- 1-12 Centre Dome.
- 1-13 Osaka Library (1904).



1-11



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2 A Shaking Period

1912-1926

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The Taisho Era – The Early Period of Showa Era

The events springing from the Meiji Restoration in 1868 saw the fulfilment of many domestic and foreign economic objectives, without Japan suffering the colonial fate of other Asian nations. The enthusiasm towards and mastery of Western culture experienced in the Meiji period continued throughout this liberal, yet brief reign. However, three major events literally shook the Taisho Era: The Great Kanto Earthquake, the First World War, and the Great Depression in 1929; but the solidity of the Sumitomo's companies stood firm under the pressure of catastrophe. Strength and flexibility defined not only the company strategy, but also the quality of the Temporary Architecture Department's buildings.



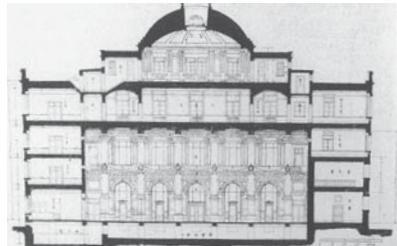
2-1 Sumitomo Bank, Tokyo Branch Office, 1917.

2-2 Elevation drawing. The banking hall: from 1st to 3rd storey, centre space.

2-3 The bank still standing after the fire following the Great Kanto Earthquake.

2-4 The Great Kanto Earthquake, 1923. Scene of Nihonbashi and Kanda areas.

2-1



2-2



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2-4

However, in that time of crisis caused by the Great Depression of 1929 when all Japan was weakened, drastic measures needed to be taken in order to survive. Even a strong corporation like Sumitomo Temporary Architecture Department gradually reduced its employees from 140 to 30 people.

In 1933, moved by the will of saving the remaining professional team, Hasebe and Takekoshi, the leaders of the department at that time, left Sumitomo and founded an architectural design office with their loyal staff, supported by Sumitomo Partnership Firm's capital.

The good relationship and connection with Sumitomo granted them the Osaka Stock Exchange project follow-up, the design and supervision of Sumitomo Family's private Buddha statue hall. They also gained the commission of the Tokyo Commercial Paper Clearing House (Design competition winning), and the Nippon Insurance Company Head Office Main Building, and many more. 10 years after its establishment, the staff grew to 250 members. But, history was once again knocking at the door.



2-5

長谷部鋭吉
Eikichi Hasebe
(1885-1960)



2-6

竹腰健造
Kenzo Takekoshi
(1888-1981)

大阪市地図

Osaka City Map

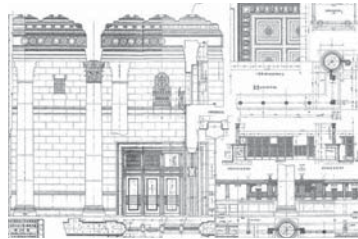


2-7 1924 mock painting of the Greater Osaka. The 2-storey temporary Sumitomo General Head Office provisory building is shown in the circle. The vacant space on the Northern side was the site for the first construction phase.

2-7

住友ビルディング Sumitomo Building (Sumitomo Mitsui Banking Corporation)

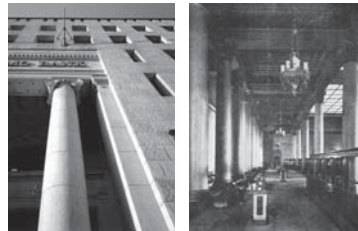
25 years after, the decision of building the Sumitomo Headquarters was made in 1895; the design was finally assigned in 1920 to the architects Eikichi Hasabe and Kenzo Takekoshi both of whom had experience studying in a Western background. Its completion in 1930 showcased an elegant architecture silently protected by a disaster prevention design.



2-8

2-8 Detailed drawing of the Banking Hall.

2-9 Entrance exterior wall and Ionic-style pillar detail.

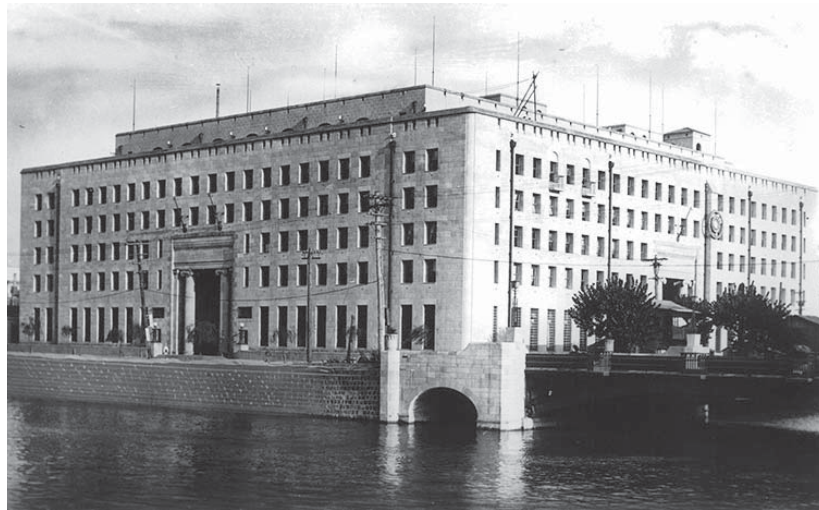


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2-10 The Banking Hall at the time of completion.

2-11 Sumitomo Building (now Sumitomo Mitsui Banking Corporation Osaka Head Office) at the time of its first phase of completion in 1926. The second was in 1930.



2-11

大阪株式取引所 Osaka Securities Exchange Building

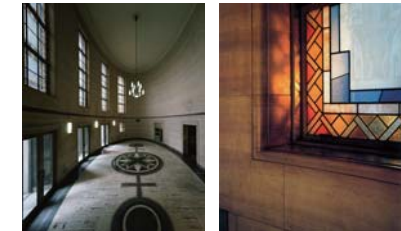
The new capitalistic economy required a new style of architecture. Osaka Securities Exchange Building, for example, needed an air-conditioned big space in order to accommodate around 2,000 people. This building is composed of two significant elements: the trading floor and the oval-shaped entrance hall.



2-12

2-12 Trading floor, a pioneer of highly-functional big spaces.

2-13 Entrance hall. Coloured marble floor with its scale-shape design pattern. Art Deco lighting apparatus releasing a tense atmosphere to the space.



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2-14 Entrance hall. Window detail with stained glass in the lower stand.

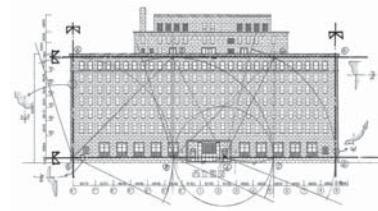
2-15 The building standing on the intersection between Sakaisuji and Tosaboridori (1935).



2-15

日本生命保険本店本館 Nippon Life Insurance Company Head Office Main Building

With its understated granite exterior, it represents the hardships of the recent-past's turbulent history. Its construction, started at the time of Hasebe-Takekoshi Architects' office, had faced many obstacles, from the Second Sino-Japanese War to World War II, when the building was confiscated by the Allied Occupation Forces. Started in 1939, it was only in 1962 that the whole of the present granite main building was completed.



2-16

2-16 Analysis of the Midouji side elevation with golden ratio (Analysis by Hisashi Yosano, former Nikken Sekkei's architect).

2-17 Ground floor windows and detailed drawing section of the golden ratio.



2-17

2-18 First construction phase completed in 1939. Second phase completed in 1962.



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3 The Starkness and Fertility of a White Page

1926–1989

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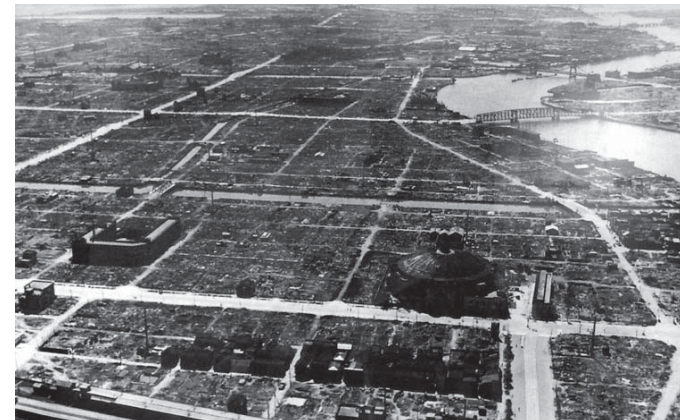
World War II

For 10 years from 1940 to 1950, Japan experienced a tumultuous time that also roughly divided the history of Nikken Sekkei. The time from the birth of Sumitomo Head Office Temporary Architecture Department to World War II is called “the time of To”, and the time after the war to 1991 is called “the time of From.” The devastation of the country is an important turning point for every aspect of Japan, including its society, economy and culture. As people in Meiji had to deal with “Western culture,” people right after the war were forced to face “the point of zero”. Thanks to this generation’s strong spirit, the history of Nikken Sekkei restarts on a blank page, with stored technologies and a deep belief in a better future.



3-1 Picture of Osaka’s Midosuji, Shinsaibashisuji, Nagahori river, Nishiyokobori canal and Yotsubashisuji area after the Air Raid Bombing (March 10th – August 14th, 1945). The Daimaru and Electricity Museum buildings survived the fire but approximately 15,000 people were killed or missing.

The impact of the war hit hard on Japan, and Sumitomo’s industrial infrastructures had suffered from major damages and destruction as well. In addition, the ensuing Allied occupation had led to the forced breakup of the largest Japanese companies, including Sumitomo. Sumitomo’s disbandment led to the establishment of a general trading company, not only allowing the absorption of repatriated Japanese workers from overseas, it was also an ingenious move to keep the business alive. Nippon Engineering Co. Ltd. was born, and its name was chosen as a good omen to represent the rebirth of a new Japan.

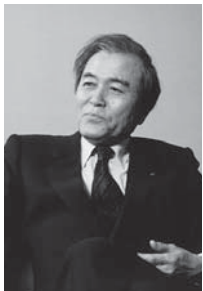


3-2 Tokyo’s Ryogoku station area after the 1945, March 10th Air Raid Bombing. The round building is the sumo stadium. The bridges crossing the Sumida River are Shinoohashi and Kiyosubashi. More than 100,000 people were killed or missing.

The 50's

The 50's in Japan opened with a sense of defeat; but architecture, like other cultural areas was experiencing a breath of fresh air, renovation and freedom. This youthful spirit aimed to rebuild cities as an "ideal state", eluding the strict adherence to conventional rules and aesthetics. "Post-war modernism", fed by the booming metallurgic economy during the war in Korea, gave Japan the opportunity to grow a liberal economy and a new democracy, bringing to Japan rapid urbanization, a change of lifestyle, trust in advanced technologies and the eagerness to build a new society.

Nippon Engineering Co., Ltd. had so far survived and prospered under two distinct, yet contradictory divisions: the general trading division, and the design and supervision department. During the post-war reconstruction wave, the general trading division led the company, supplying steel materials, steel pipes and electrical cables; overshadowing the other department. Therefore, in order to avoid being absorbed by the stronger department, and the ban against trading materials by the former Japanese Institute of Architects', the design and supervision department of Nippon Engineering pursued separate management and became independent. This was the foundation of Nikken Sekkei Komu Co., Ltd. (Osaka Head Office and Tokyo Branch).



薬袋公明
Kimiaki Minai
(1926-2007)

3-3



林昌二
Shoji Hayashi
(1928-2011)

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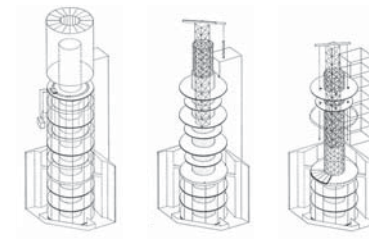
The leading architects, Minai in Osaka and Hayashi in Tokyo, gave their unique imprint in design, with the former balancing modernism and tradition, and the latter positively adopting new technologies to create the emblematic architecture of that time. The company's contribution had a unique and enormous impact, departing from classic style architecture to embrace rationality and freedom. It can be recognised under the label: "Nikken Sekkei Komu's post-war modernism".

What we see now, at this stage of history, is two separate companies, siblings of what previously was Nippon Engineering Co. Ltd. It is easy to understand how the relationship between the two continued based on mutual respect and appreciation. For example, the business of The Osaka North Harbour Co., Ltd. was taken over by Sumitomo Corporation and the technologies were handed down to the civil engineering department of Nikken Sekkei Komu Co. Ltd.

In 1953, Nikken Sekkei Komu Co. Ltd. took over engineering operations and human resources from The Osaka North Harbour, founding the soil survey department. From the beginning of the design, the department was able to test the soil independently.



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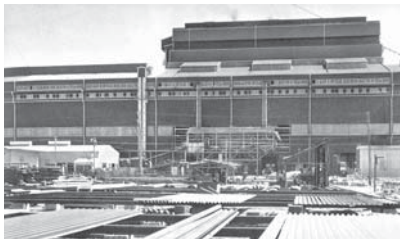
3-5 *San'ai Dream Centre, 1962.*

3-6 *Construction Drawing. Doughnut-shaped PS concrete slab, built around the circular cylinder-shaped core at the centre, and the from the top lift-up method. This design was invented due to the challenging conditions of the construction site in Ginza, Tokyo. The unusual construction process became itself a performance.*

The Legacy of the Iron Mills Projects

During its 115 years of history, the sequence and succession of companies since Sumitomo Temporary Architecture Department have allowed the inheritance of skills, vision, activities and technologies through the years up to today. These shared roots have been passed through the generations, like a cultural baton. For example, factory projects like the iron mills, which appeared during the post-war period of high economic growth, were based on pre-war models – e.g. The domestic iron mills for Sumitomo Metal and the steel pipe mills in China.

In order to build large iron mills, it is essential to have civil engineering design, such as land forming and the foundation of heavy machines. Additionally, in large factory projects, it is necessary to have a strict cooperation between architects and civil engineering. The ability of the civil engineering department to design and supervise iron mills helped the company to overcome post-war hardship.



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3-7 *Yawata Steel Works Tobata Converter Factory (1959). (Now Nippon Steel & Sumitomo Metal Corporation Yawata Steel Works).*

3-8 *Sumitomo Metal Industries, Ltd. Wakayama Iron Works (1965).*

The legacy of these factory projects has been handed down to the manufacturing and the distribution facility design divisions of the Nikken Group, and became today's three "roots":

1. Structural design of towers and skyscrapers (as represented by TOKYO SKYTREE®).
2. Project management (e.g. Kansai International Airport Terminal Building).
3. Overseas projects (e.g. China).



3-9



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Since its foundation, Nikken Sekkei Komu Co. Ltd. has been favoured by numerous important projects thanks to its versatility and above all its diversity. Projects include:

JCA (Japan Construction Agency)

Assigned directly by the US military, who highly appreciated the company's double soul (Design + Civil Engineering Department). Projects were ordered continuously from 1952 to 1955.



3-12

3-9 *Nagoya TV Tower (1954).*

3-10 *Tokyo Tower (1958).*

3-11 *Kobe Port Tower (1963).*

3-12 *Nikken Sekkei Komu's first president, Kyusuke Ozaki (at the center), during a meeting with JCA.*

114ビル 114th Bank Head Office

114th Bank Head Office in Takamatsu. With a height of 64 metres, it was the tallest building in western Japan at the time and a beloved landmark of the city. The exterior wall of the fifth floor is verdigris bronze that shines with the green trees of the opposite Chuo Park. The ground floor peristyle protects people from strong sunshine and rain. The building exquisitely fits the concepts of: “the large scale of the townscape” and “intimate humane scale”.



3-13 114 Bank Head Office (1966)

BELCA Award: Received the long-life category in 1992 / Received the best-reform category in 2013.
An awarding system which aims to contribute to the conservation of good architecture in Japan.

広島県庁舎 Hiroshima New Prefectural Office

Hiroshima New Prefectural Office, built 600 metres away from the atomic bomb's point of impact, has become the symbol of new democracy. The nature of the building, representing “brightness” and “openness”, expresses the freedom and open-mindedness of the new society. The building lies on the clay terrain of the Ota River Delta, making a multi-storey building construction impossible. To overcome this problem, it was cleverly decided to arrange a medium-rise head office and a low-rise South building horizontally, in order to spread the weight equally.

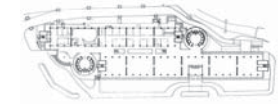


3-14 Hiroshima New Prefectural Office (1956).

パルサイドビル Palaceside Building

Palaceside Building, a compound of offices, commercial facilities and a massive newspaper printing factory, set in an important site in front of the Imperial Palace, and covering an area of 120,000 square metres. Furthermore, it can be regarded as a concentration of details born at the intersection of time and space: the rhythmical structure of the exterior wall, with horizontal cast aluminium flat louvers, presents a sense of Japanese delicacy, while the meticulous work on the vertical rainwater pipes and the gutter can be seen as a tribute to traditional Japanese architecture.

To approach this project, the design team divided it into two main areas: a long lifespan “frame” that was fixed to the environment; and short lifespan “facilities” that could be changed (energy system, interior decoration, etc.) according to future requirements. The “stage design” method (now “fast track”) was adopted to speed up the process and contain costs.



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3-15 Plan of a standard floor and site layout.

3-16 Flat louvers, rainwater pipes, and vertical gutters made of cast aluminium.

3-17 Palaceside Building (1966).



3-17

The Power of Freedom

In the West, a professional corporation is a legal corporate status authorised by law. As great importance is given to social responsibility, the firms of accountants, lawyers, and architects are required to own all of their stakes to avoid control or pressure from “outsiders”. There is no similar law in Japan.

When Nikken Sekkei Komu Co. Ltd. became independent after World War II, it was “designed” to become a professional corporation in the same spirit of regulation as Western law. Since then, the company has firmly maintained its In-house Shareholder Corporate System, not allowing any external shareholders. “The power of freedom” became the foundation to accomplish work based on professional ethics and obtain credence from society at large, and it still regulates our ethic approach for the entire Nikken Group.

The Big Bang of Technologies

In the 30 years between 1970 and 2000, society and technology expanded like the big bang. In 1972, the concept of limited natural resources started to rear its head. Since then, the question on “how to use natural resources, while keeping the environment safe” has produced various energy saving technologies.

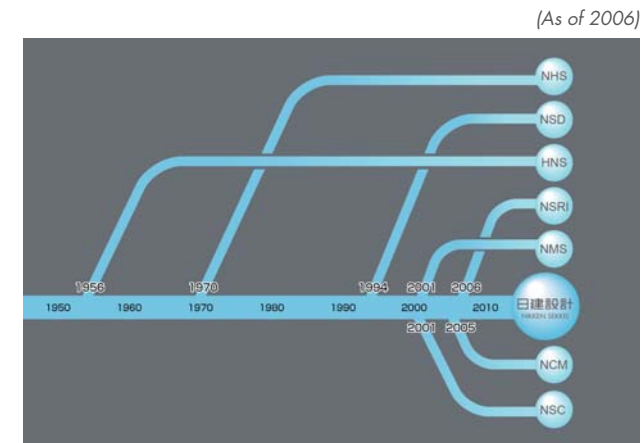
In 1970, Nikken Sekkei Komu Co. Ltd. changed its name to Nikken Sekkei Ltd. with the English version of the name borrowing the tagline: “planners / architects / engineers”. Since then, the subject of sustainability has been a priority matter in Nikken Sekkei’s projects.

Who Are We?

At this stage of recent history, when the economy is growing and society is changing with new needs and demands; it becomes natural for an enduring company like Nikken Sekkei to question itself. “Who are we?” and “Where are we heading?” The answer can be found in a report drafted in 1992 which sets three goals:

1. To expand and develop the field of design services:
2. To make propositions and contributions to society from the point of view of ordinary citizens.
3. To build an information and technology network over various fields.

Later, 7 group companies were established and the Nikken Group was created, covering the major fields in each professional area.



NHS : Nikken Housing System
 NSD : Nikken Space Design
 HNS : Hokkaido Nikken Sekkei
 NSRI : Nikken Sekkei Research Institute
 NMS : Nikken Sekkei Management Solutions
 NCM : Nikken Sekkei Construction Management
 NSC : Nikken Sekkei Civil Engineering

A New Demand for Quality and Diversity

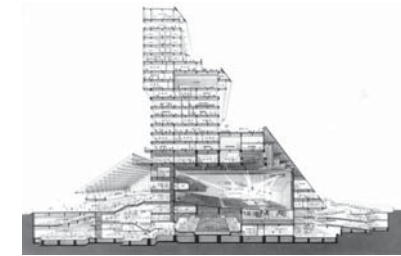
Despite the oil crisis that hit in the 1970s, the Japanese economy entered a period of stable-growth, followed by an impressive export expansion in the 1980s, which gave Japan steady international competitiveness. As business was booming, society was growing, becoming more complex, cultivated and demanding; architecture became once again the reflection of an era. Cities themselves became larger and more complicated, presenting new urban contexts, containers of new life styles. Large-scale projects with different functions compounded started appearing on the market; the use of atriums for natural light became popular in design in order to give more movement and simplicity to these new buildings. Arenas and auditoriums, which could accommodate a large number of people became necessary, and structural, acoustic, and air-conditioning technologies were developed in this period. In addition, on the wave of this financial fervour, working hours extended, and people came to realize that offices were living spaces: the old concept of office needed to be reconsidered and modernised. As a result, planning technologies for office spaces, design technologies of high-rise buildings, engineering of exterior walls and IT technologies were developed.

- These technologies continue to develop today, despite the swing of the bubble economy, thanks to the growing demand for more quality workspaces in urban environments.

The following Nikken Sekkei projects are representative of the time.

中野サンプラザ Nakano Sunplaza

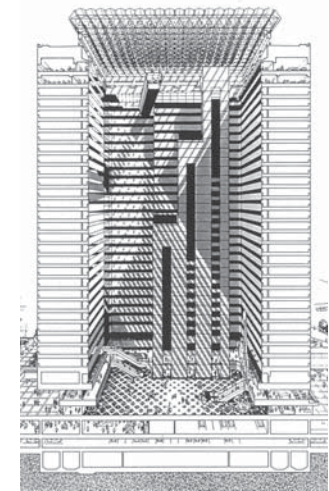
The Nakano Sunplaza project started in 1969 with a challenging task by the Ministry of Labour: arrange different buildings and facilities in a rather limited area. The integration of three buildings in a large triangular architecture was a revolutionary idea that brought unprecedented benefits. This 50,000 square metres “super complex” included: a ground-floor auditorium, a high-rise hotel, sports facilities with a swimming pool and bowling alleys, a lecture hall, and offices. The proposal was highly appreciated by the committee. Nakano Sunplaza opened in 1973 with a public speech by Prime Minister Kakuei Tanaka, celebrating “The hall for youths” (former name, Nakano Sunplaza).



3-18 Cross-section perspective drawing of Nakano Sunplaza (1973).

新宿NSビル Shinjuku NS Building

The Shinjuku NS Building was presented to the public in 1982, responding to the request from the Tokyo Metropolitan City Government to relieve the congestion in the Tokyo city-centre by becoming a new pole of attraction. This upstream low-rise complex, designed with a large atrium surrounded by two L-shaped office buildings, enhanced the “City in the City” feeling. People walking through could breathe a completely different experience from the suffocating skyscrapers nearby. Shinjuku NS Building is an all-time favourite in the hearts of the citizens.



3-19 Cross-section of Shinjuku NS Building (1982).

Receiving History and Passing it on to the Future

Architecture is a bridge between the past and the future, allowing one to read the signs and styles of the time; and with a careful look, a hint of the future. Some architectures are more inclined to receive from the past; others to deliver to the future.

大阪市庁舎 Osaka City Hall

The old Osaka City Hall construction was completed in 1921, presenting a dignified Renaissance style. After 57 years, Nikken Sekkei was appointed to its reconstruction. The design was conceived to take over the image of the old city hall and harmonise the new building with other nearby historical architectures. The whole of the building was completed in 1985.



3-20 façade.



3-21 Arch and Lion motif. Decorations of the frontal wall in the new conference room assembly hall.

日本電気本社ビル NEC Head Office Building

The NEC Head Office Building, commonly known as “NEC Super-tower”, was completed in Tokyo, Tamachi, where NEC was established in 1990. As the problem with skyscrapers is the creation of strong wind disturbance on the ground, Nikken Sekkei presented the innovative idea of a wind hole at the centre, weakening the energy of the wind and allowing natural light to illuminate the atrium on the lower floor (elevators and stairs on both side). This rising skyscraper in the dense urban area is likened to a 3-stage booster-rocket and space shuttles while its exterior expresses the corporate identity of the company.



3-22 section.



3-23 NEC Head Office Building (1990).

Creating a City

Nikken Sekkei started to work on urban planning projects. Osaka Business Park shows the introduction of urban development.

From Meiji era until the pre-war era, the Osaka Castle area had been an important national military site. Adjacent to it was Osaka Artillery Arsenal, which was the best arms factory in Asia, both in production and technology. This area later became the site of Osaka Business Park.

The story of Osaka Business Park started in 1945, precisely on August 14th, the day before Japan's defeat was decided. That day, 716.5 tons of bombs were dropped on the site, devastating the Arsenal Artillery. For 20 years, the place remained an abandoned brownfield which passed through the hands of different owners, and the end to four big enterprises. One of those was Sumitomo Life Insurance Company. Nikken Sekkei, invited by Sumitomo Life Insurance Company, was the first to see the social potential of the site; and soon the master plan was realised in association with Maki and Associates Architecture and Planning, and Takenaka Corporation.



3-24

3-24 *Business Park, Osaka.*3-25 *View of the abandoned old artillery arsenal site, left in rubble after the bombing.*

3-25

Nikken Sekkei suggested to add an East-West axis to Osaka City which already had an existing North-South axis. The master plan, proposed in 1969, for the 26-hectare artillery arsenal site was drawn based on this grand plan. However, due to the 1973 economic depression, the plan was on the verge of falling apart. As it was the first massive development by the private sector, receiving state authorities' consent turned out to be the major obstacle. However, thanks to the strong will of the development association and the cooperation of the Mayor of Osaka, in 1976 a land readjustment was approved, and finally the project got on track. A city with lush greenery was created.

The ideal to create a lively city, where people are happy to live and work, became a reality. A Zelkova treeline, running from East to West, still makes the city breathe. Moreover, the "system" to create only 5 large districts (Super block), instead of dividing the site into small areas, was once again a revolutionary idea.

Nikken Sekkei is working on urban planning projects in various cultures and societies all over the world. We will never forget that cities are not only "containers", they are living creatures themselves.

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4 The Growth and the Future of Human Society

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Architecture for Better Living

Cities and architectures are now required to adjust to new challenges, like: “how can cities and architectures contribute to society? And, how can they create a good “Way of Life?”. It is then essential to plan urban development to prevent problems arising from unregulated expanse of cities; and to make designs in accordance with the attractiveness of cities. Nikken Sekkei and the Nikken Group companies are working from various points of view to create new value.

泉ガーデン Izumi Garden

In 1994, the new station of Roppongi- 1-chome in Tokyo spearheaded the area's redevelopment. This urban planning decision greatly contributed to the development of Izumi Garden, a 2.4-hectare historic area lying on a complex and rolling topography. Turning this characteristic ground feature into the main star of the project allowed the creation of a three-dimensional space designed for pedestrians. The project design dynamically connects with a series of terraced plazas cascading to the subway station. Today, it presents a comprehensive complex for work and life in the middle of the city, including offices, a business club, commercial and residential offerings, and a museum.



4-1

渋谷ヒカリエ Shibuya Hikarie

Shibuya Hikarie, with its large vertical space called “urban core” extending from underground, provides a highly convenient and barrier-free space for changing trains, with natural light and fresh air. The total area of 140,000 square metres is a compound of different functions that people can comfortably enjoy. The method to integrate public transportation with urban development, is called TOD (Transit Oriented Development). This urban development method is starting to get attention from overseas countries in which urbanisation is rapidly developing.



4-2

クイーンズスクエア横浜 Queen's Square Yokohama

Queen's Square Yokohama, a large complex of commercial facilities, offices, hotels and concert halls. Queen Mall, with a length of 300 metres, is an axis of activities stretching the entire complex and connected to the dynamic atrium space, and the Minatomirai 21 Line subway station – called station core. Minatomirai 21 is now an infrastructure which attracts people, providing an increase in urban activities to the city, a recollection of the past with a warm historical memory of Kannai, and the buzzing atmosphere of Motomachi-China Town.

It is an example that shows how the development of a city should be, thanks to the virtue of the people who planned, performed, and strongly supported the project.



4-3



4-4

4-1 Izumi Garden (2002). Green terraces linking the commercial facilities.

4-2 Shibuya Hikarie (2012) ©Shibuya Hikarie.

4-3 Queen's Square Yokohama (1997). Station core connecting the subway station.

4-4 PACIFICO Yokohama, arch-shaped building (1991). Yokohama Bay Hotel, at the centre-right and neighbouring buildings increasing in height. Queen's Square Yokohama, designed in collaboration with Mitsubishi Jisho Sekkei.

The Power of Green

Iron, glass and concrete. Modern cities are filled with artificial materials which give off a suffocating feeling. Creating pleasant greenery not only enhances the look and feel of the townscape, it improves the environment for people, and it softens the heat-island phenomena. It is called “the power of green”.

Midosuji West

Midosuji West is a three-block area running on the West side of Yodoyabashi Station in Osaka. It is a lively spot filled with restaurants and cafes where in Summer, people can enjoy walking in the shade. 30 years ago, it wasn't as charming. It was a grey area filled with people walking hurriedly, and dust kicked up by cars. The story of its rebirth started with the Ginsen Yokobori Building. Its wall was set back 6 metres from the road, making room for a wide pathway with two Zelkova trees and sixteen Camphor trees as a public open space. This building became the pioneer of the spread of a green network in the area.



4-5

4-5 In the red circle: Ginsen Yokobori Building, 1986. The creation of the green environment started from the north-south street in front of the building and extend to the east-west street intersection. Nikken Sekkei was engaged in the thick green part, and not in the light green part.

4-6 The entrance of this basement-level restaurant opens on a little court filled with greenery, allowing for natural light and a light atmosphere.

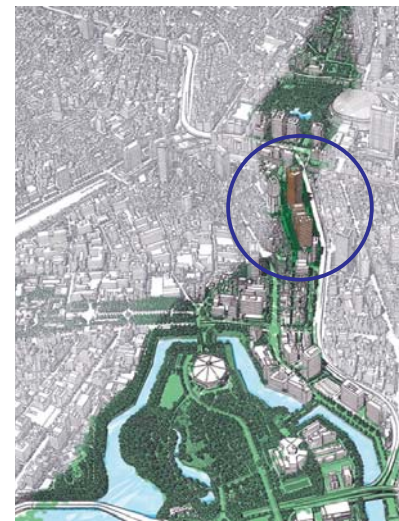


4-6

Iidamachi, I-Garden Air.

In developing this 280,000 square metres area, in which office buildings, a hotel, commercial facilities and condominium apartments are built, a 300-metre North-South “Leafy shade mall” for pedestrians was made. The Metasequoia conifers that run down the street mark the change of seasons with different leaf colours, offering an evocative landscape to people walking by. In addition, a gentle winding path enclosed by a big maple-lined tunnel was made on the North side of the leafy shade mall. This path was named Hirakawa no Kei after the river that was flowing in this area until the early Edo Era. The stone embankment of the river, unearthed during archeological research, was used for the stonework of this path, symbolising a continuity with the past.

The Nikken Sekkei Tokyo Office is located in Iidamachi I-Garden Air, the Osaka Office is in the Ginsen Yokobori Building, and the Nagoya Office faces Hisaya Odori Park.



4-7

4-7 Bird's-eye view of the large green area. In the upper part: Koishikawa Korakuen Garden; in the lower part: the Imperial Palace. I-Garden Air (circled in blue).

4-8 Green-rich walkway in “I-Garden Air.”



4-8

Creative Management Realises Unprecedented Projects

As society, economy and technology are developing at an accelerating pace, we increasingly work on projects of unprecedented size or content. Our company believes the fundamental steps to approach any project, the exceptional ones in particular, are based on the following three elements:

1. Clarify and share a goal and the way to achieve it
2. Maximize the value of the project
3. Advance the project in a way to garner public support

Tokyo Midtown

Tokyo Midtown is a 4-hectare large-scale development in the city centre. 12 architectural design offices and designers were selected to work together and make the project perfectly fit the surrounding area. Nikken Sekkei was in charge of controlling the whole design as core architect, and working as a project manager to assemble as many as 30 design contracts. The scale of the development, the transportation plan, the model plan, and the project opening time were clarified at an early stage of the project. In order to achieve goals in a short time, a master schedule was prepared, followed by negotiations and procedures with the public administration. At the same time, the design was in progress. The master schedule was then shared with all parties involved; this usually helps to find the best and fastest solution in long-term projects where the societal and economic situation may suddenly change.

The master schedule is still the fundamental basis of Nikken Sekkei projects process.

When climbing an untouched mountain, climbing techniques are necessary. Success and failure depends on the choice of the route and organizing a team. Project management is the same. Creative project management of a one-time project leads to a decisive factor in determining its success or failure.



4-9

東本願寺 真宗本廟御影堂 Higashi Honganji Shinsyuhonbyo Goei-do

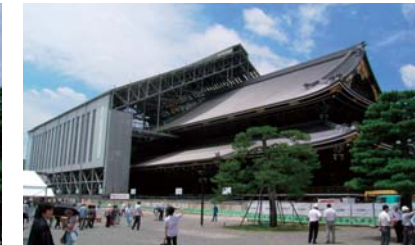
Higashi Honganji Shinsyuhonbyo Goei-do is a cultural heritage site. The project, therefore, involved the cooperation of national treasure experts. We sought to garner public support to cover the management of construction costs. Donations, from more than 1,300,000 families associated with Honganji throughout Japan, made this project possible. Protecting and repairing roof tiles, wood and lacquer was the main scope; various new technologies were introduced to strengthen and update old fire-prevention equipment; while anti-seismic reinforcements were also applied to reduce the impact of strong earthquakes. This is an example of how new technologies are applied to preserve historic buildings.

4-10, 4-11, 4-12

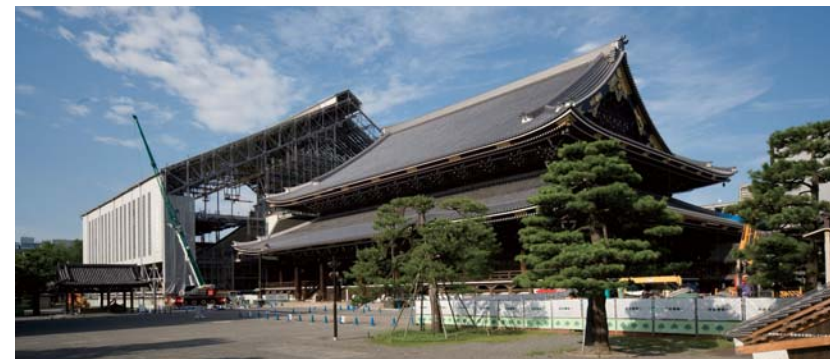
After completing the renovation construction in 2009, the temporary 1500 ton roof was slid to the Amida hall renovation construction site, which is adjacent to the site of Goei-do. Nikken Sekkei proposed a horizontal transfer, and a makeshift of the primary roof as a part of management. This method shortened the construction period and saved cost.



4-10



4-11



4-12

Unifying the Whole Company Performance

Nikken Sekkei, which works on creating value for architecture, cities and the environment, has decided to unify the entire company's performance and management as the Nikken Group. In 2004, Nikken Sekkei's head office, and subsequently all the head office functions, as well as the network centre for its activities of Osaka, Nagoya and Kyushu offices, were transferred from Osaka to Tokyo.

Moreover, in order to respond to the development of social systems and technologies; intellectual and human resources, and organizational design have become flexible, assembling the best team configuration, depending on the project. Today, the whole company can do project management regardless of the district, and also organize the best team for overseas projects.

As of 2016, the Group is composed of 7 firms:

- **Hokkaido Nikken Sekkei Ltd. (HNS)**
Architecture and urban development based on technologies specific to cold climates since 1956.
- **Nikken Housing System Ltd. (NHS)**
Since 1970, designing housing facilities for a comfortable life.
- **Nikken Space Design Ltd. (NSD)**
Since 1994, a professional group of designers and creators, who actively work in wide areas of interior design.
- **Nikken Sekkei Civil Engineering Ltd. (NSC)**
Since 2001, based on civil engineering technologies, it works actively to improve urban infrastructures and urban development in Japan and overseas.
- **Nikken Sekkei Management Solutions Ltd. (NMS)**
Since 2001, offering consulting business aiming to maximise the value of real estate property owned by companies; and to improve the intellectual productivity from various work-styles of office employees, until 2016.
- **Nikken Sekkei Construction Management Ltd. (NCM)**
Since 2005, the biggest construction management firm in Japan supporting businesses in the process of decision making and transparency for complicated construction projects.
- **Nikken Sekkei Research Institute (NSRI)**
Since 2006, it aims to create a "sustainable society." It continues consulting business, for both public and private sectors in Japan and abroad, combining urban design and environmental-related engineering.

Dealing With the “Unknown”

Recent decades have put Japan and the world economy through difficult times, from the Great Hanshin Earthquake (1995) to the Lehman Brothers Bankruptcy (2009), to the Great East Japan Earthquake on March, 2011 and its related Fukushima Daiichi nuclear power plant disaster; not to mention global warming. The “unknown” is an event beyond any prediction which needs immediate reaction and preparedness. Youthful thinking and volunteer spirits may be the answer to the “unknown”; the Nikken Group supports such volunteer activities with great expectation.

The Evacuation Map.

In 2011, right after the Great East Japan Earthquake, Nikken Sekkei invited the university students of the devastated areas to the Tokyo Office: a volunteer club was immediately organized and the group was sent to the evacuation centres of Miyagi and Iwate prefectures. The task of the volunteer club was to study a realistic evacuation route map (Nigechizu) in collaboration with local residents. Evacuation routes were marked with different colours according to residents’ different ages and walking ability. This map serves as reference data to be used in case of evacuation, and is an efficient city plan which is based upon the actual conditions and characteristics of the area. Nigechisu was selected as “Good Design best 100” of the Good Design Award in 2012 in Japan, and received the international highest award in the conjunction projects competition of the Code for Resilience, by the Global Facility for Disaster Reduction and Recovery.



4-13



4-14

4-13, 4-14 Designing the Nigechizu.

馬蹄寨希望小学校 Matizhai Hope Primary School

Since 2008, Nikken Sekkei Shanghai has worked as a professional volunteer in reconstructing Hope Primary School in the Matizhai village in China, a deprived area with a severe climate and located in the mountains. The area offers only few flatlands where people can gather. This project aimed at making this primary school an invaluable public space, avoiding the stereotypical school image and respecting ethnic minorities who bring life to the village with their multi-coloured traditions. We worked on strengthening the sense of the community, and sharing our vision with local authorities and teachers. The school was completed in April, 2013.



4-15



4-16



4-17

4-15 Matizhai Hope Primary School (2013). The connecting bridge is covered with a pergola of bougainvillea.

4-16 Children having lunch at the table-tennis tables.

4-17 Traditional costumes of Huazu ethnic minority.

4-18 Matizhai Hope Primary School Children and Nikken Sekkei Shanghai Volunteer Team.



4-18

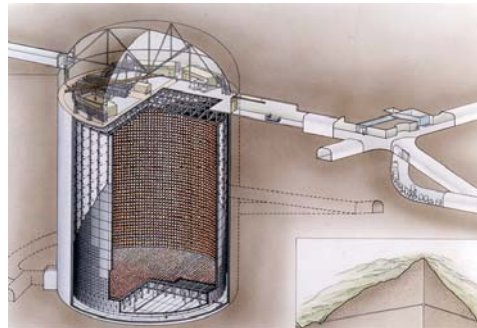
Moving Space and Structure

Space has always been a fascinating topic. More than 400 years ago, Galileo Galilei observed the stars with a handmade astronomical telescope. Contemporary researchers are exploring space and astronomical objects using massive observational equipment like Super-Kamiokande and J-PARC (Japan Proton Accelerator Research Complex).

In 1998, an experiment with Super-Kamiokande discovered the Neutrino, the elementary particle with the least amount of mass. To prevent cosmic rays from disturbing observation, Super-Kamiokande was built 1,000 metres underground, filled with 50,000 tons of ultra-pure water, and equipped with 11,129 photomultiplier tubes. Nikken Sekkei designed Super-Kamiokande's stainless lining (coating) of the massive water tank and the structure to support photomultiplier tube.

J-PARC, a high-intensity proton accelerator facility, had many problems in each phase of its planning, design and construction. Nikken Sekkei designed an accelerator tunnel, with two to five-metre-thick reinforced concrete to shield from radiation and solve several other issues: adjusting to heat expansion and transfiguration of the tunnel, controlling minor vibrations and sinking of the floor in order to install precision machinery, securing the floor's flexibility, taking measures for waterproofing and water leaks in underground facilities.

Nikken Sekkei has also been involved in other world-class leading science facilities for: RIKEN (Advanced Institute for Computational Science) and Japan's Agency for Marine-Earth Science and Technology.



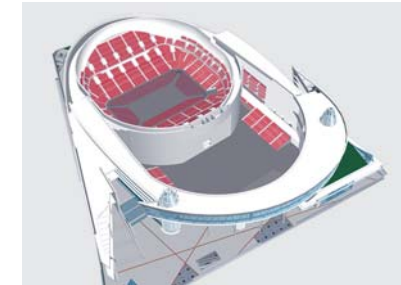
4-19 Super-Kamiokande, built 1000 metres underground.

さいたまスーパーアリーナ Saitama Super Arena

The Saitama Super Arena is a hall with one of the highest operating rates in Japan. It provides different space possibilities via a "moving architecture". It has the ability to change the size of the hall and the number of seats to adapt the arena according to the event. The total structure's weight of 15,000 tons is a moving block supported by 64 carriages. It moves thanks to 20 controlled motors and takes about 20 minutes to cover 70 metres. The Saitama Super Arena design won the MAS 2000 Award.



4-20

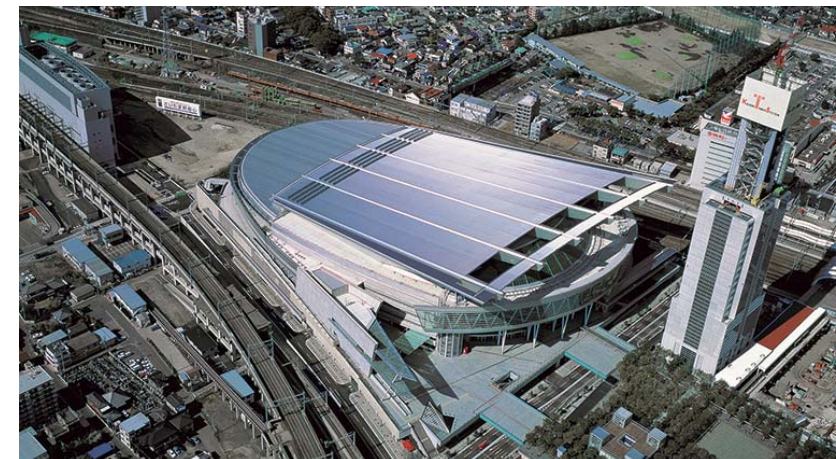


4-21

4-20 Stadium mode.

4-21 Arena mode.

4-22 Saitama Super Arena (2000).



4-22

Unconstrained Frame Design

In architecture, structural systems can be compared to the human body featuring a skeleton, a respiratory system, a circulatory system, a digestive tract, and a nervous system. For example, air-conditioning, sanitary equipment and electricity and control systems work in that way. In addition, all different forms and shapes in a vertebrate being provide a massive source of inspiration for revolutionary and creative structure design in architecture. Nikken Sekkei worked in deep collaboration with its clients to create truly impressive design.

モード学園スパイラルタワーズ Mode Gakuen Spiral Towers

Mode Gakuen Spiral Towers is a building with a characteristic spiral form. The architecture has a structural system similar to the human body. As in bodies, the spine absorbs the rotational force, at the centre of the Mode Gakuen Spiral Towers there is a very strong rolling structure called inner tube, absorbing crooks arising in the building. Like a spine, this inner tube is filled with longitudinal shafts (up-down swings, elevators and stairs). At the top, there is a vibration control system which reduces the vibration in case of an earthquake, just like the human head.



4-23 Mode Gakuen Spiral Towers (2008).

ホキ美術館 Hoki Museum

Japan's first museum dedicated to realist paintings. People can appreciate art in a 500-metre traversable route, separated into 60-100 metre sections, and designed with a tube made of overlapping successive gentle curves. This arc-like tube gallery is designed with a seamless box-shaped structure, like a crustacean's body, where the tube steel plates of the top are supported by two parts only. The cantilever nose doesn't need a pillar or a foundation pile.



4-24 Hoki Museum (2010).

Pursuing the Possibility of Materials

A country's culture is also driven by the availability of local materials. While in Europe, architecture found immortality through the use of everlasting stones; Japan has always sought permanence through replacement. Due to the use of perishable materials like wood, or earthquakes hitting the country, reconstruction and restoration are the core concepts for continuity.

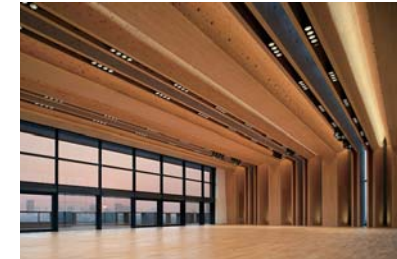
木材会館 Mokuzaikai Kaikan

Mokuzaikai Kaikan is a 7-storey office building in central Tokyo. The top floor is a wooden-structured hall exemplifying the attraction of standardised wood right in the centre of the city. Its terrace, located in a recess facing West, employs wood to block the direct sun. The standard-size domestic lumber, processed without incombustible chemicals, received fire-resistance certification from the Ministry of Land, Infrastructure, Transport and Tourism. Young trees were re-planted in the forests where trees were cut down over a surface area of 1000 square metres.

4-25 *Great Hall on the top floor: the wood of the upper part is a structural frame which allows natural light to illuminate the room.*

4-26 *Terrace as a place for rest and communication: an outdoor unit for air conditioning is set inside the ceiling.*

4-27 *Mokuzaikai Kaikan (2009). The amount of wood utilised in this urban architecture created a sensation in the news at that time.*



4-25



4-26



4-27

Learning from Life

In architecture, the idea of “replicating the flexibility of nature” is gaining traction in order to create sustainable buildings for the present and future generations.

Beijing Media Network

The Beijing Media Network Building is a high-rise tower with a 180-metre atrium at its centre. The atrium’s 180,000 cubic metre air volume stores heat during the Winter, and works as a buffer zone between the working area and the outside. In Spring and Autumn, air is captured by natural ventilation ducts around the exterior and emitted through the top of the atrium by stack effect. Gravity ventilation is the effect that occurs when the indoor heated air becomes light and flows up. This solution is similar to how the African Giant Senecio tree, which can grow at an altitude of 4000 metres thanks to its empty stem, can store warm air during the day to tolerate temperature drops at night.



4-28



4-29



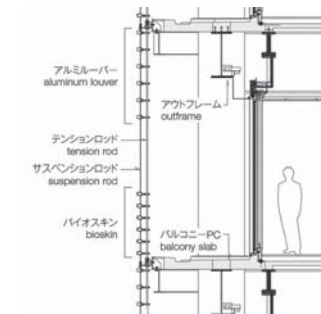
4-30

NBF Osaki Building

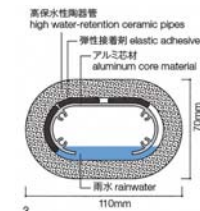
was inspired by the mechanism of perspiration and evaporation of sweat in human bodies. This mimicking mechanism is called Bio Skin and was applied to the building’s North-East exterior walls, presenting attached water-retentive pottery pipes as shading louvers. The retained rain water circulates inside the pottery pipes, releasing heat through evaporation, consequently cooling down the exterior walls. This is the world’s first attempt to reduce the burden of air-conditioning and contribute to the reduction of CO₂ emissions. Bio Skin not only cools down the building, but the surrounding city too by about 2° C, which is the equivalent of 2 hectares of forest area.



4-31



4-32



4-28 Giant Senecio living at around 4,000 metres altitude near Mt. Kilimanjaro in Africa.

4-29 Looking up toward the atrium, we can see the semi-circular cylinder-shaped elevator going up and down. Building’s design with: BIAD, Bringing Chinese Culture & Chinese Dream; Radio, Film and Television Design and Research Institute Digital R&D Centre.

4-30 Beijing Media Network (2008).

4-31 Detail photo of exterior wall by bio skin, NBF Osaki Building (2011).

4-32 Potter tube of bio skin.

Pursuing a Sustainable City and Architecture

In 2011, it was announced that the world population had exceeded 7 billion people. According to the United Nations' reports, cities will have to accommodate over 6 billion people by 2050. In other words, sustainable plans for cities are becoming essential.

Tianjin Yujiapu Financial Area Development.

In China, even though the government has policies limiting the inflow of people from farm villages to cities, the population density in the cities is not decreasing. The Nikken Group has decided to collaborate with the Chinese state enterprises in an urban development in Tianjin as consultants. We will put our knowledge on creating low carbon cities and architecture to propose comprehensive methods in order to reduce the environmental impact, like reducing consumption of local and architectural energy, employing unused and reusable energy, creating green areas, considering biodiversity and creating cool spots, improving the collection rate of waste material to 80% and reducing CO₂ emission. This approach to realise the first world low carbon CBC (Central Business District) was selected as the first plan for "low carbon model urban development" by the Asia-Pacific Economic Cooperation (APEC).



4-33 Yujiapu Financial Area Development Project

Tokyo Midtown

Tokyo Midtown opened in 2007 as an urban complex of 560,000 square metres in a 10.2-hectare area composed of shopping centres, offices, hotels, art museums and collective housings. The large greenery, created by consolidating city functions, produces an air current with a cooling effect that reduces the urban heat island phenomenon in Tokyo. In the aspect of supplying energy, "district heating and cooling system" was adopted to provide hot and cold water, and steam. The "Water heat storage system" was also adapted.



4-34



4-35

4-34 Tokyo Midtown, 2007. 4-35 Tokyo Midtown, energy supplying area.

ポーラ美術館 Pola Museum of Art

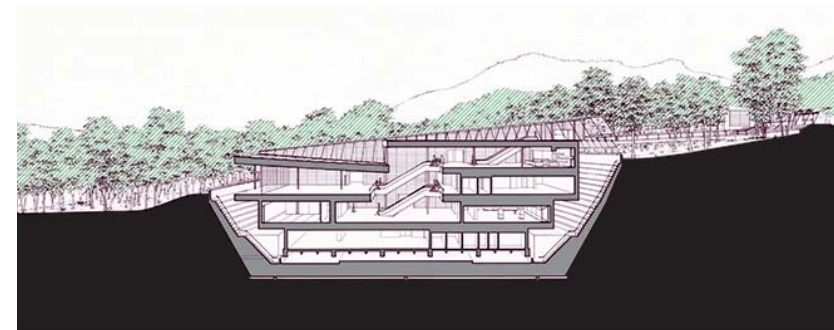
Pola Museum of Art is nestled in the lavish nature of Hakone among different species of plants, animals, birds and insects. The desire of the clients and the team was to create a building with full respect of the area. The chosen circular concrete structure has a reduced "length of girth" minimising its impact on the surrounding nature. An underground circular structure allows a better flow between two layers of water streams (upper and lower). Since humidity harms art, the building has been shielded by preventing the circular tub from making contact with the ground and situating it on earthquake resistant rubber. It looks like a space ship gently landed in the forest of Hakone.



4-36

4-36 POLA Museum of Art (2002). View over the Sengokuhara forest in Hakone.

4-37 Cross-section. The museum looks like a circular tub engineering structure landed from the sky. The entrance is on the top-right.



4-37

Integrating Culture and History

Terroir is a French word often used in the wine industry which means Land. It extends from terre, which derives from the Latin word terra meaning soil. In its meaning, terroir includes the climate and the environment (soil, climate, landform and people) in which grapes are grown. Similarly, architecture can be read according to local land, climate and characteristics. The following projects were born, inspired by the climate, history and culture of the region, using modern technologies in the attempt to pursue sustainable cities that will hopefully lead to new social systems and environmental preservation.

沖縄科学技術大学院大学 Okinawa Institute of Science and Technology

Okinawa Institute of Science and Technology is a world leading education and research centre. Prior to the design, a detailed investigation was carried out to promote coexistence with animals, plants, water resources and the ecology of the site—a 240-hectare virgin forest. The design was formulated focusing on the concept of “Stone Walls Drawing a Curve of Gusuku”, with curves following the contours of the topography, and the natural surroundings. Gusuku are the beautiful historical stone walls preserved in Okinawa.

4-38 Nakagusuku Castle's ruin.

4-39 1st phase plan completed in 2010, in Okinawa's natural forests.



4-38



4-39

蘇州電視台 Suzhou Media Network

Suzhou Media Network is located in the Suzhou Industrial Park, a modern area with convention centres, skyscraper offices and hotels. In 2010, Nikken Sekkei won the international architectural design competition with a proposal that enhanced the ancient double soul of Suzhou city: the silk industry and the water city. The concept presented two sticks covered with translucent silk fabric. From that plan, two skyscraper towers with continental shapes were born. Between these two towers a multipurpose square is topped with a delicate glass roof. The exterior wall is like a Suzhou tile and the rugged empty spaces are natural ventilating holes to input fresh air. The landscape design has water scenes which recall Suzhou's past.



4-40

Our Point of View on Overseas Projects

As an eclipse has two focal points, Nikken Sekkei's dynamism between "Japan" and "overseas" exemplifies this ecliptic geometry. As the years go on, we keep on developing our professional services in the world, pursuing mutual understanding of different cultures.

Xintiandi

Xintiandi is an historical area in Shanghai which saw the rise of Lilong residence architecture, subsequent to the heavy migration of people from the countryside to the city during the Taiping Rebellion after the first Opium war in 1840.

As the former foreign settlement, the Lilong is a combination of traditional working-class Chinese and British style homes distinctive of Shanghai. The Lilong area was chosen as the stage of the 1st National Congress of Communist Party of China. In later years, the Shanghai municipal government opened a call for project ideas to develop this historically important place. The winning proposition to preserve and renew the Lilong, seeing business opportunities for cafes, restaurants and live houses, was presented by Vincent Lo. Under the Lo's leadership, Nikken Sekkei International (the affiliate is now absorbed in Nikken Sekkei) conducted a thorough field investigation prior to the design, and worked on the detailed design with Tongji University College of Architecture Design and Research Institute, as well as making the schematic design with Wood & Zapata Office. Shanghai Xintiandi preserved the historical façade as much as possible, attracting visitors with its contemporary yet historical atmosphere merging in a green central sphere.



4-41



4-42

Giant Wild Goose Pagoda

The Giant Wild Goose Pagoda is a significant historical heritage. Built in 652 (Tang era) as a five-storey tower to store ancient scriptures, it was later reinforced and enlarged to a 7-storey tower in 705 (Wu Zetian reign) and it is one of the few remaining constructions from the Tang dynasty. The main theme of its redevelopment was how to fit a Tang architectural design in the present era. The Xian Qujiang district, in charge of the development, entrusted Nikken Sekkei, whose capability was proven in the Shanghai Xintiandi, with the master plan (for the master plan and basic plan). Giant Wild Goose Pagoda North Square was completed in 2005 as the first phase of the improvement project. Its large artificial fountain lake is the face of the project and it creates a gradual stair-like water scape of approximately 50 metres from East to West and approximately 250 metres from South to North. The reflection of Giant Wild Goose Pagoda North Square on the surface is simply stunning.



4-43



4-44

4-41 The commercial tenants were mainly invited from Hong Kong and an atmosphere of an English-style Hong Kong appeared in Shanghai.

4-42 Photograph of the progressing construction: the front Lilong was demolished to create a square.

4-43 The master plan of the improvement project for Xian Giant Wild Goose Pagoda district.

4-44 <Giant Wild Goose Pagoda Square> opened in 2005. At first, when we designed it, we conceived of a "tranquil space for prayer" and <Giant Wild Goose Pagoda> with a wide water surface. The right tower is <Giant Wild Goose Pagoda>, a historical architecture at the era of Tang. The architecture stretching out under Giant Wild Goose Pagoda is <Dacien Temple>.

Warm City

Warm City, the new city centre of St. Petersburg metropolitan area, was decided to be set where the North side road meets the Gulf of Finland. This area is about 20 kilometres from the centre of the city and is now a traditional resort district. The starting point of its planning respected St. Petersburg's original plan: concentric rings of multiple canals and radial roads. However, after Nikken Sekkei joined in the plan, a dramatic change was made: a "grand canal", which penetrates the new city from East to West, appeared. This "grand canal" made the whole of the plan clear, and accelerated the creation of attraction throughout the city.

Due to its position, Warm City was planned to be built by filling up the sea of wetlands using a box body construction method. Instead of filling in the sea with earth and sand, this method sinks large concrete boxes in the sea and connects them one another. The natural energy from the underground space between the boxes was suggested by Nikken Sekkei to be used to warm up the harsh St. Petersburg's Winter: the collected solar heat is kept in an underground thermal storage tank, to bank heat in Summer and release it during the Winter.

Another characteristic of the underground is its thermal stability over the four seasons: the temperature doesn't vary greatly. The geothermal utilization suggested by Nikken Sekkei releases warm air in Winter and cold air in the Summer. These methods are helpful not only to save energy cost but also to reduce CO₂ emission, the main cause of global warming.

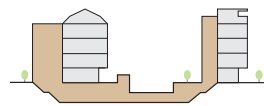
However, the box body construction method is not only about cutting emission: pedestrians can enjoy the natural well-lit underground network, which is connected to atriums on the ground all year and under different weather conditions. Parking lots are also built underground to prevent cars from breaking down due to the extreme cold. Spacious landscapes full of green are then made possible above ground.



4-45



4-46



Nikken Sekkei is also involved in several projects in Moscow, and urban design projects are also developing in Krasnoyarsk, Nizhny Novgorod.

Ho Chi Minh City Urban Planning

The former Saigon has streets laid out in a grid-like urban structure, built in the French colonial period. Like Hanoi, it preserves a strong historical atmosphere. Ho Chi Minh City, the centre of politics, economy and culture in Southern Vietnam, is now the country's largest metropolis with a population of 6 million inhabitants. As the population is rapidly increasing, it suffers from a number of urban problems: congestion, deterioration of the living environment, rising land price and sprawling. Without any plan, the situation can only worsen.

In 2006, the Ho Chi Minh City Government People's Committee commissioned Nikken Sekkei to make the master plan for the total 2000 square kilometres urban city area. As more than 50 % of the city area is less than 2 metres above the sea level, the geographical condition limits the proper urban development of the land. Nikken Sekkei then suggested a poly-nuclear distributed urban structure, linked with transportation infrastructure based on the terrain conditions. In order to channel the urban growth in the right direction, guidelines for land use were strategically made in detail. Furthermore, the development of a city transportation system was proposed to cause minimal environmental burden, reduce the air pollution, help the formation of a city landscape and the creation of prosperity.



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4-48

4-45 Warm City, a resort type multi-function complex city. In Summer, people can approach the area by speed boat from Water Plaza, located close to the Hermitage Museum.

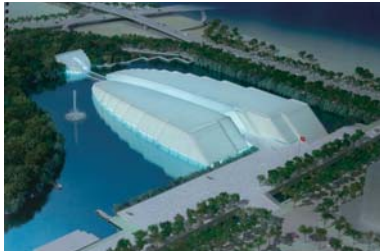
4-46 The underground network for pedestrians, illuminated by natural light, is connected to the galleria and atrium of each building. Galleries and atriums are shown in brown.

4-47 Bird's eye view of the urban project. Proposed in the respect of the Ho Chi Minh's urban structure.

4-48 Creating a comfortable space for pedestrians with connecting greenery shade. A new transportation system (LRT) runs through a preserved and renewed historical townscape.

ベトナム国立歴史博物館 The National Museum of History Vietnam

The National Museum of History Vietnam is planned to be located in the West part of a new urban area designated for 2020 in Ho Tay, west area of Hanoi. In 2007, Nikken Sekkei won the architectural design competition held by the government of Vietnam. The total floor space is around 88,000 square metres and only one kind of construction material/method was planned to be used as the basis. The structure was made by piling numerous eave-shaped materials made of concrete; this typical Asian method comfortably protects the large inside space from Asian Monsoon and strong sunshine. The inside was designed to allow the view of all functions from along the centre axis of the building. In adapting the concept of Feng Shui and using natural energy, Nikken Sekkei considered the water of the artificial lake, on which the museum of history floats, as essential to create harmony. The design is a tribute to Vietnam's history and the architecture fits gracefully with the surroundings.

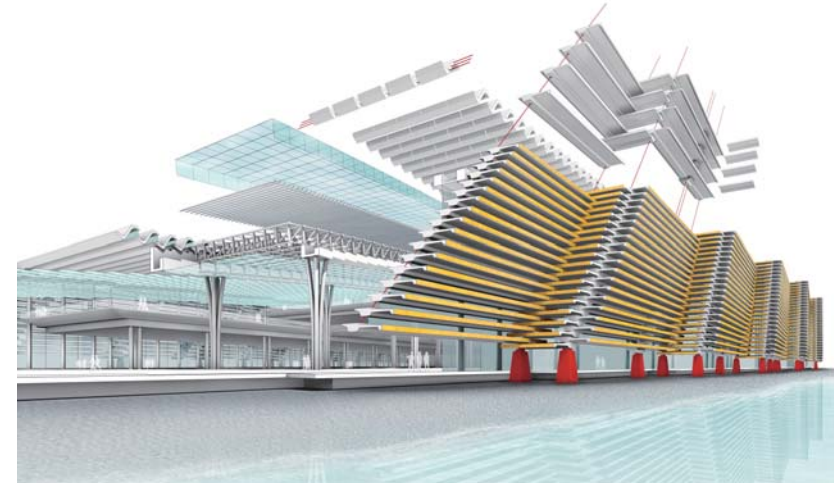


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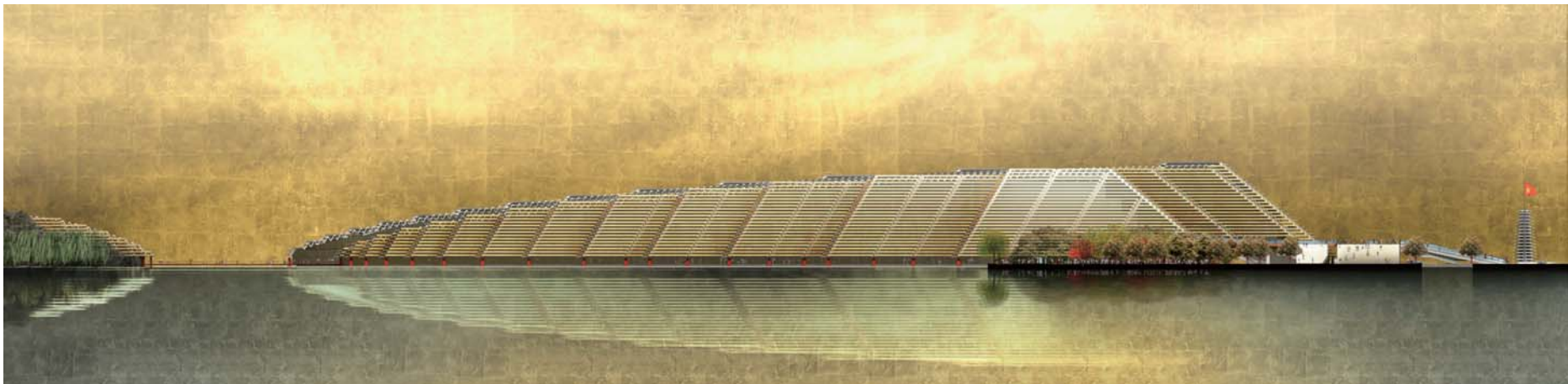


4-50

- 4-49 Design inspired by the Vietnamese legend which sets the origins of the Vietnamese people in the marriage between a dragon and a fairy. Water is essential to a dragon. The low temperature of the lake's water is used for air-cooler as natural energy.
- 4-50 Residences of Batak Simalungun in Sumatra. The lower part of the residence has structure recalling the southern-style log houses.
- 4-51 Perspective drawing of the National Museum of History Vietnam recalling the legend of the rising golden dragon.
- 4-52 Concrete pre-casting material assembled like a log house is firmly connected with PC steel material.



4-52



4-51

With the People of the Modern Islamic Society

In 1899 a Japanese book was published in the U.S. and then translated into Arabic, Persian and Indonesian and read by people from Islamic cultures. This Japanese is Inazo Nitobe's "Bushido: The Soul of Japan." This work is said to have something in common with the Islamic world, where doctrine is the foundation of every aspect of society, including the economy. "Rectitude", "Sincerity" and "Benevolence" are important virtues in Islam, just as in "Bushido". When Nikken Sekkei proceeds the projects in Islamic countries, we always respect the Islamic culture and society.

イスラム開発銀行本部ビル Islamic Development Bank Headquarters

Islamic Development Bank Headquarters was established in 1973 as a foundation of the mutual aid system based on the Sharia, and now it is providing development assistance in more than 50 Islamic countries. The structure includes two independent functions serving as a bank headquarters and research and training facilities, integrated under a large roof. The light seeps in from a symbolic window with Islamic pattern like lattice work. The thick outer wall, which is characteristic of Islamic architecture, and the design theme of a spacious inner light garden reflect concepts and customs unique to Islamic architecture. Islamic Development Bank Headquarters is now the regional landmark and the symbol of "mutual aid" rooted in the Islamic doctrine.



4-53 Islamic Development Bank Headquarters (1993)

タダウル・タワー Tadawul Tower

Tadawul Tower is one of the five core buildings in the King Abdullah Financial District (KAFD), in Riyadh. As keeping a unified crystalline "facet" was a mandatory requirement for this project. Nikken Sekkei's proposal, selected in 2010, included an improved version of low-e glass technology with high performance heat insulation: three panels of glass equipped with small horizontal fins were used to shelter the windows from direct sunlight. The project is on track to receive LEED (Leadership in Energy & Environmental Design) Gold level certification, and has diverse functions: a forum. The external appearance reminds us of an elegant crystal.



4-54 Tadawul Tower (Scheduled for 2018)

Japanese Architectural Culture and Traditional Craftsmanship Handed Down into Modern Times

“Kyoto” holds special meaning for Japanese people. The aesthetic sense has been developed and refined for more than 1,200 years: architecture, food, clothing, and manners have become forms of art unique in our culture.



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4-58

4-55 Dining room: the light apparatus of the ceiling has 15 patterns of Mino paper and Japanese cedar. The length of a horizontal timber beam is 22 metres.

4-56 The Japanese ship was made by a marukobuneshi carpenter, the last of his kind. This type of Japanese traditional wooden ship was predominant in Edo era.

4-57 Sliding door needle-works made by traditional craftsmen. Also appointed as a craftsman to make a needle work art piece as a present to Emperor and Empress.

4-58 Gold leaf-shaped artwork made by a craftsman recognized as Living National Treasure.

4-59 Kyoto State Guesthouse, garden corridor bridge.

京都迎賓館 Kyoto State Guest House

Kyoto State Guest House is an example of Japanese traditional architecture assembled with modern technology. Completed in 2005, it aims to welcome international guests wholeheartedly, making them experience the strong connection between Japanese people and nature. An integrated space of gardens and architecture was created, connecting the garden and the inside space with deep eaves making the garden float in and out of sight. The design idea was based the creation of a flat building with a large hanging roof. The shape of the roof plays an important role, making the building appear to be composed of only the garden and the roof. The main structure is made of steel frames and reinforced concrete, while the traditional wooden components (eave and “component material”) were assembled to realize a proportion of Japan-specific delicate space. The roof surface is dark green (the colour of nickel oxide) and the finishing is harmonized with the surrounding greenery coming from the Kyoto Imperial Palace. Pressured complex metal material of nickel and stainless steel is employed for roofing. The overall harmony was effectively fulfilled with delicate care towards every detail, using a limited variety of materials and modern technologies by traditional craftsmanship. The Japanese tradition of appreciating the aesthetic of simplicity, was fulfilled.



4-59

The Hyogo Performing Arts Center was completed as a symbol of the reconstruction of hearts and culture after the Great Hanshin earthquake on January 17th, 1995. For the design, materials were limited to wood, bricks, concrete and glass in order to respect the souls lost in the quake; excessive finish and meaningless form were thus avoided. The spaces of the large hall with about 2,000 seats and the small hall with about 400, were clad with solid mahogany wood, which excites the hearts of audience and players. Solid Japanese cedar wood with flat grain made in Hyogo Prefecture was used for the middle hall with about 800 seats to create unique presence. On the other hand, the exterior wall was made by piling large 500,000 pieces of brick with uneven firing spots to create a profound atmosphere. The pillars of the building, slender like those of traditional wooden temples, were built with precast concrete and high-strength concrete, and piano steel wire was used to give a pre-tension.



4-60 Hyogo Performing Arts Center (2005)



4-61 The opening concert held in the large hall (October 2005)

Institute for Global Environmental Strategies conducts problem-solving research and policy recommendation addressing climate change, energy issues and the creation of a sustainable society. In 2002, its headquarters was completed on Hayama hill, surrounded by greenery and overlooking Mt. Fuji. The institute was designed to be a prototype of environmental architecture in harmony with the research conducted there. The building draws a large arch along the view that spreads to the West. Its important feature is the rhythmical vertical louver made of recycled wood and "light shelf" freely located on it. The sunshine streaming to the upper part of the "light shelf" is led indoors as gentle reflected light, and it provides the 70% of the required light. In addition, the vertical louver can shade most of the afternoon sun load, while preserving its great views. As a tribute to Japanese traditional architecture, shitomido and shoji connect the indoors and the outdoors.



4-62

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4-62 The projecting edge of the building and the light shelf like a flying bird.

4-63 Standing on a hill in Shonan Village. 2002.

4-64 The exterior view.



4-64



東京スカイツリー TOKYO SKYTREESM

In 2003, six Tokyo broadcasting operators requested a new tower taller than 600 metres. Tobu Railway site was chosen among several candidates and the land changed from a freight train yard into a tower for providing information widely. It can be said that, TOKYO SKYTREESM, completed in 2012, is an architecture that connects Edo, pre-war and post-war eras with the future.

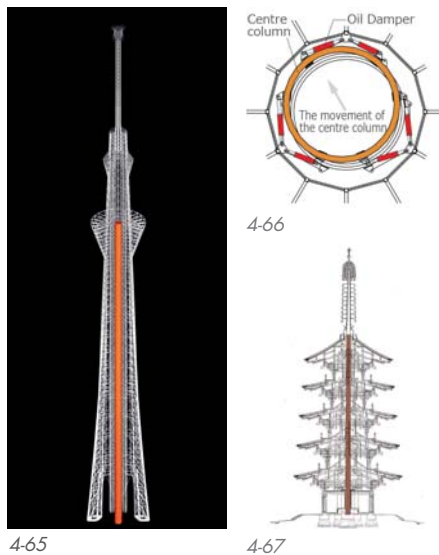
Photo by Ryota Atarashi

Bringing Together Modern Technologies, Challenge Height and Site Condition

In deciding the design of an over 600-metre tower, the long and thin shape of the site was the crucial factor. Usually, the wider the area, the better the structural condition is. In this particular case, a triangle can reach the longest length side, while a circular plan allows an all-around view from the observation deck; the unique design of a tower with triangle plan gradually changing into a circular one to was created. The complex three-dimensional curve required the development of much more difficult structural technologies than those used for conventional steel structures.

The design and construction of TOKYO SKYTREESM saw the introduction of the “Centre Column Vibration Control System”: the tower, as a hybrid, was completed with a peripheral steel frame and a cylindrical core of reinforced concrete for the main body. These two structural elements are basically isolated from each other, and a vibration control system works as a “weight.” In the case of a strong earthquake or wind, the centre column “weight” sways with a slight difference in timing from the overall steel truss structure. The time difference between the vibration of the steel truss structure and concrete column weight enable them offset each other and reduce the vibration of the whole tower.

Like traditional centred wooden column towers in Japan, the centre column was structurally isolated from the peripheral layered frame called cylindrical body. In the later cases of wooden towers, the lowest part of the centre column was set directly on the ground base stones. TOKYO SKYTREESM has a similar style and it is put on an anti-seismic rubber bearing isolator, which is replaceable in the future.



4-65

4-67

“Shape” and “Colour” by the Japanese Traditional Sense of Aesthetic

In architecture, entasis is the application of a convex curve to a surface for aesthetic purposes. It's like a little bump. This form is produced considering the visual depth, cambers, and bow curves. TOKYO SKYTREESM has a slight appearance of an entasis, referring to the curved shape of old temples' rooves, or swords. Its colour also reflects the Japanese sense of beauty: it is the lightest shade of indigo blue and it has been named “SKYTREESM white.”



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4-69

Landscape Beyond Time and Space

On the day of the Great East Japan Earthquake (March 11th, 2011), transportation in Tokyo stopped and many people had to find a different way home, even walking. TOKYO SKYTREESM, which was reassuringly standing still against the sky, served as a point of reference in Tokyo, like a lighthouse. One week later, it reached its final height of 634 metres, as well as the heart of many people.

4-65 The tower consists of an outer steel truss frame and a centre column, firmly fixed with each other at the lower part. In the upper part of the tower, the two are separated, ranging from GL+125m to GL+375 m, in order to behave independently when hit by an earthquake. Elastic oil dampers connect the two: the motion of these two elements under seismic force offset each other to function as large stabilizer.

4-66 Centre Column Vibration Control System.

4-67 <Daigo-ji Pagoda>. Built in 951. The bottom part of the center column only put on the foundation stone. The height is about 38 metres.

4-68 Night view with Iki illumination. Iki in Japanese means spirit.

4-69 Night view with Miyabi illumination. Miyabi represents the Japanese aesthetic.

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あとがき

Epilogue

A pupil of the haiku poet master Basho once said: “something unaltered over thousands of years” and “something altered according to the change of era and environment”, have the same origin. It is the concept between “permanent and temporary.”

This is the spirit of Nikken Sekkei.

This book represents Nikken Sekkei as one “Life”, narrating its story from birth to the present. One chapter after another, we felt Nikken Sekkei grow along with the modernization of Japan. Our pledge for the future is to keep pursuing the required values in a new era, under an ever-changing society.

This book wouldn't have been possible without the help of many people, and the instruction and the support from Teruaki Sueoka, vice-president at Sumitomo Historical Archives. I conclude this epilogue with grateful acknowledgements to them.

Kazuhisa Hayashi, Nikken Sekkei Ltd. Adviser

2015, Spring.

**Kazuhisa Hayashi, Nikken Sekkei Adviser at the time of the first publication.*

A Journey Through Our First 115 Years of History

[Written by]

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