Feature
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Yaesu 2-Chome Central District: The final piece in the redevelopment of the Tokyo Station area

A major project bringing together people and technology



Kajima is carrying out the large-scale Yaesu 2-Chome Central District Category-1 Urban Redevelopment Project at the former site of its Head Office, where the Company laid the foundations for its business. The project will create a mixed-use complex on a roughly 2-hectare site in front of Tokyo Station. The 43-story building, with 3 basement levels and a total floor area of approximately 390,000 m², will house offices, commercial facilities, serviced apartments, and more. Building on the trust we have established with the local community over many years, we are bringing together our people and technology across development, design, building construction, and civil engineering to advance this project. As the final piece in the redevelopment of the Tokyo Station area, the project brings together employees who are carrying forward Kajima's legacy while pursuing further growth. This feature highlights their efforts.

Developing a sense for high-rise construction

Eight tower cranes, each around 100 meters tall, dominate the sprawling construction site among the high-rises around Tokyo Station's Yaesu Exits. Below, columns extend from the basement through the lower floors, while commercial facilities, a theater, and other spaces take shape.

"The site is surrounded by railways and expressways, with complex electricity, gas, telecommunications, and other infrastructure networks underground. Kajima teams are combining their expertise to build this large-scale complex, including links to the adjacent bus terminal, while minimizing the impact on the surrounding area," says Yoshiyuki Takahashi, Executive Officer and Project Manager for the redevelopment, which began in 2024. Since joining Kajima in 1988, Takahashi has worked on major urban redevelopment projects, including Shinjuku Park Tower and Nihonbashi Muromachi Mitsui Tower. During the expansion and renovation of the Kasumigaseki Building, Japan's first skyscraper, he consulted its original hand-drawn plans, carrying forward Kajima's high-rise legacy. "Skyscrapers require seismic control technologies and expertise in environmental and energy solutions and civil engineering. Kajima's strength lies in its capabilities across these fields," he says.



Yoshiyuki Takahashi
Project Manager

At the project's peak, some 3,300 skilled workers will be on site, with mid-career employees playing a key role in realizing Takahashi's vision. Having gained experience during their first 13 years at Kajima, when the Company emphasizes professional development, they take charge of individual construction areas.



Satoshi Saito
Deputy Manager, Construction

Deputy Construction Manager Satoshi Saito oversees planning, safety, quality, and schedules for above-ground work. "With a building of this scale, the challenge is deciding where to begin in the low- and mid-rise sections and how to sequence the work safely and efficiently," he says. Now in his 13th year with Kajima, Saito is planning all above-ground work on a large-scale project for the first time, building on his experience with entire small- and medium-scale projects. "I have coordinated underground, mechanical, and electrical work before, but the scale here is entirely different. By developing the plans myself with advice from the Project Manager and experienced colleagues, I hope to develop the sense needed to plan and manage high-rise construction."



Ryosuke Takagi
Deputy Manager, Mechanical and Electrical

The project's mechanical, electrical, and building services work is extensive, involving eight tower cranes and 12 construction elevators. "My previous projects had only two or three of each, so this time we had to start with planning and procurement," says Ryosuke Takagi, Deputy Manager of the Mechanical and Electrical Section. "By coordinating their assembly and operation to prevent accidents, I hope to keep construction running smoothly."

As building services work moves into full swing, more than 25 partner companies will be involved. Equipment Manager Hirokazu Ota says, "We are planning the delivery of large equipment into the heart of the building and the sequencing of work. With so many partner companies and complex coordination, thorough planning is essential to maintaining quality." Underground and civil engineering work presents distinct challenges in the heart of a city. The top-down method allows underground work to proceed downward from the first floor alongside above-ground construction, shortening the construction period and reducing noise. "My challenge was to develop an earth-retaining plan and select methods that would minimize the impact on surrounding electricity, telecommunications, water, sewerage, and other infrastructure," says Yoshihiro Uehashi, Deputy Construction Manager for underground work. Now in his 16th year at Kajima, Uehashi has more than a decade of underground construction experience. "Working with structural designers, I explored how to ensure safety in a constrained environment amid existing buildings and intricate infrastructure connections. This gave me new insights for future projects." Tomoki Takahashi, Deputy Construction Manager for civil engineering work linking the project to the subway and adjacent buildings, faces a different challenge. "Besides the physical constraints of underground urban infrastructure, we face tight time constraints." Much of the work must be done at night to avoid disrupting the city, requiring schedules managed down to the minute and close coordination with facility operators and government authorities. Now in his 18th year with Kajima, Takahashi is working on his first redevelopment project. "This project has taught me much about building consensus among the many parties involved. I feel a strong responsibility to create connections that make the city more convenient and will continue to advance the project safely."



Yoshihiro Uehashi
Deputy Manager, Construction



Exterior rendering



Hirokazu Ota
Manager, Equipment



Tomoki Takahashi
Deputy Manager, Construction

Yaesu 2-Chome Central District: The final piece in the redevelopment of the Tokyo Station area

A major project bringing together people and technology

Kajima's enduring ties to Yaesu

The final piece in the redevelopment of three districts around Tokyo Station, this project aims to further revitalize Yaesu. It began with a study group on the area's future in 2005. A preparatory association was established in 2013, and Kajima has since supported the project as a partner and led its secretariat. "I have a strong sense of the community's trust in Kajima. I value the relationships built by my predecessors as I work with landowners and other stakeholders," says Ryosuke Marumo, Manager in the Real Estate Development Division. Marumo joined the project in 2020, as the Preparatory Association became the Redevelopment Association. He has since helped build consensus among title holders, coordinate property vacation and handover, and manage rights conversion. Through this work, he came to appreciate Kajima's deep roots in the community.



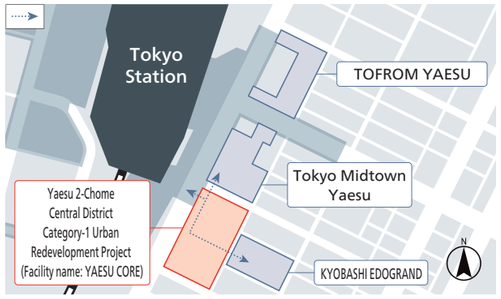
Ryosuke Marumo
Manager

Kajima was based in Yaesu from 1929, expanding its business from there. After the Head Office relocated in 1968, the Yaesu Book Center opened on the site, realizing fourth President Morinosuke Kajima's vision of a bookstore where people could readily find any book they wanted. "Landowners have told me how they sheltered beneath Kajima's former Head Office during the war and how the Yaesu Book Center later helped put the area on the map. These stories have given me a profound sense of the ties between Kajima and Yaesu," says Marumo.

This legacy of trust continues. Kajima is involved as a landowner, participating association member, and secretariat, and in detailed design, construction, and construction supervision. "Landowners have confidence in and high expectations of Kajima's combined development, design, and construction capabilities," says Marumo. As a result, approximately 250 title holders, tenants, and other stakeholders associated with 37 buildings agreed to the redevelopment, enabling work across the entire project area to begin. "Demolition cannot begin if utilities remain connected to even one building," says Project Manager Takahashi. "Close coordination with the Real Estate Development Division enabled construction to get off to a smooth start."



The former Head Office building in the redevelopment district



Designing one of Japan's largest mixed-use developments

A defining feature of the project is that it is one of Japan's largest mixed-use redevelopments, bringing offices, commercial facilities, serviced apartments, an international school, a theater, and a bus terminal under one roof. "We are deeply committed to creating a new urban hub where people from diverse backgrounds come together and generate new ideas and perspectives," says Toyofumi Kamogawa, Chief in the Architectural Design Division and a member of the detailed design team. "It is a continuous process of resolving technical complexities and creating functional, well-designed spaces within tight constraints." The Architectural Design Division has assembled a team of some 50 specialists covering the building's various uses. The team handles all aspects of design coordination, from meeting the regulatory and operational requirements of each use to integrating the building's exterior and interior spaces.



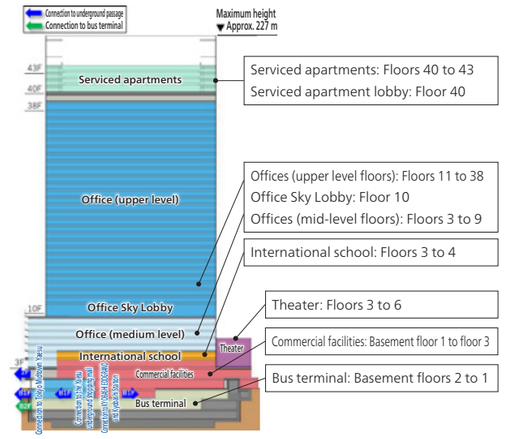
Toyofumi Kamogawa
Chief



Atsushi Suzuki
Chief

Chief in the Architectural Design Division, who is responsible for the structural design of the low- and mid-rise sections, says, "Having worked mainly on office buildings, I welcomed the challenges specific to theater design, including large column-free spaces and stringent vibration and sound insulation requirements. I designed the structure to enhance the building's architectural appeal while maintaining structural efficiency and constructability."

Yusuke Suzuki, Group Leader responsible for building services design, adds, "Even air-conditioning systems must be planned differently for offices, theaters, and other uses. The challenge was determining how best to position machine rooms and main service routes while meeting each facility's requirements."





An artist's rendering of the ground floor plaza area, with a broad spectrum of visitors moving inside the large mixed-use complex

A mixed-use development must meet the demanding functional requirements of each facility while creating a unified exterior and spatial design. Bringing to life the spirit of Yaesu, where tradition and innovation have long coexisted, requires Kajima's ability to unite expertise across disciplines. Kamogawa says, "The design and construction teams meet on site daily to work through issues together. Despite the project's exceptional technical complexity, we have maintained the highest standards without compromising the exterior or spatial design. This testifies to Kajima's comprehensive capabilities."



Yusuke Suzuki
Group Leader

As the project moves toward completion in 2029, Project Manager Takahashi says, "The local community is looking forward to an even more vibrant and appealing Yaesu. With safety always our highest priority, we will continue to build with care and dedication for Yaesu's future."

Project details

Project name	Yaesu 2-Chome Central District Category-1 Urban Redevelopment Project
Facility name	YAESU CORE
Client	Yaesu 2-Chome Central District Urban Redevelopment Association
Design	Design development, contract documentation supervision, and general supervision NIKKEN SEKKEI LTD Contract documentation and supervision Kajima Corporation
Construction	Kajima Corporation
Construction period	August 2024 to January 2029 (planned)

Feature 2

A⁴CSEL passes Kajima's on-site capabilities to the next generation

From skilled workers to automated machines, and on to everyone in the field

The construction industry faces a rapidly growing workforce shortage as skilled workers age and fewer people enter the industry. Two major challenges are reducing labor requirements and passing skills on to the next generation. Against this backdrop, Kajima is addressing both through its automated construction system, A⁴CSEL® (Quad Axel). By capturing experienced workers' skills and know-how as data, Kajima has developed technologies that enable machines to replicate their work. Automated construction can now be performed by less-experienced employees, and A⁴CSEL is being applied to a growing range of projects, from dams and tunnels to site development. The expertise captured in A⁴CSEL will serve as an asset in developing the next generation of skilled workers, passing Kajima's on-site capabilities "from skilled workers to machines and from machines on to the next generation."

A blast design system that replicates the expert judgment of experienced workers

At the face of the 26.2-kilometer Sasson Tunnel, skilled workers were drilling blast holes deep in the mountains roughly midway between Otaru and Sapporo. Part of the Hokkaido Shinkansen extension from Shin-Hakodate-Hokuto Station, the tunnel is being excavated using the drill-and-blast method.

"Once we fine-tune the distance between the drill jumbo and the tunnel face, we simply start the system and monitor it," explains Ryo Nakano, a fifth-year Kajima employee, while overseeing the automatic operation of its three booms from the control room. As he speaks, the drill jumbo continues boring into the oval rock face, roughly 8 meters high and 10 meters wide. Drilling, the first stage of the drill-and-blast method, has traditionally relied heavily on skilled workers' experience and expertise. As excavation advances, they assess changing rock and geological conditions from the drill's response and the shape of the face after each blast. This intuitive judgment, known as "reading the mountain," is used to adjust the drilling pattern, for example by adding holes in harder sections, before marking the hole positions. Guided by these marks, three skilled workers each operate one of the drill jumbo's booms and drill simultaneously, a task requiring advanced skills.



Ryo Nakano

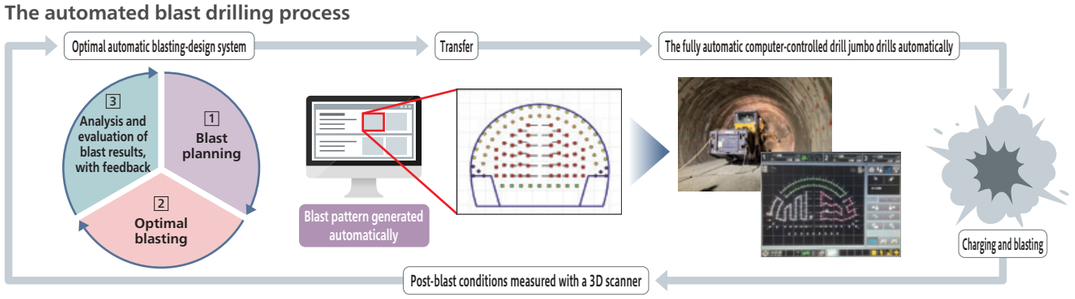
To automate the process, Kajima developed an "optimal automatic blasting-design system" under A⁴CSEL that replicates this intuitive judgment. Using proprietary formulas, the system determines the optimal number and placement of blast holes and amount of explosives from data on rock hardness and fractures. Once drilling-energy data and tunnel-face scans are entered, it automatically generates blast instructions. These are sent to a fully automated, computer-controlled drill jumbo, which drills the specified pattern, standardizing the process while reducing personnel requirements.

Nakano, who joined the project in 2024, says, "I had no tunnel excavation experience, but I was able to begin drilling almost immediately. I believe I could train someone else to take over in about a week." Drilling at the Sasson Tunnel normally requires five people. With the fully automated drill jumbo, only two are needed: an operator and a safety observer. About one hour of automated drilling is conducted during the day-night shift change, reducing total daily working time by around 25 minutes and improving productivity.



The control cabin of the fully automatic computer-controlled drill jumbo operating with the optimal automatic blasting-design system

The automated blast drilling process





Automated drilling by A⁴CSEL for Tunnel, in use on the Sasson Tunnel project

Advancing Application at Construction Sites

Kajima began developing A⁴CSEL in 2009 to address three major construction industry challenges: workforce shortages, low labor productivity, and frequent occupational accidents. After applying A⁴CSEL to dam construction and site development, it began developing A⁴CSEL for Tunnel, a next-generation automated tunnel construction system, in 2017 to address the aging workforce.

Stage one began in 2018 with automated machinery and motion control systems developed and refined in a mock tunnel. Stage two began in 2021 with rock excavation trials at the Kamioka Test Tunnel in Gifu Prefecture. By 2024, Kajima had achieved automation and remote operation across six processes: drilling; charging and blasting; muck removal; surface trimming; shotcreting; and rock bolting. The third stage now applies the technology at construction sites. Takashi Mega, Deputy Senior Manager of the Civil Engineering Department's Tunnel Group and former Kamioka Test Tunnel project manager, says, "The technology has advanced to the point where construction no longer depends on highly experienced workers. By deploying it at more sites, we aim to refine it further, increase awareness of automated construction, and promote wider adoption."

The main challenge is drilling precision. At the Sasson Tunnel, rock-face irregularities caused the boom-to-face distance to deviate from expectations by up to 10 cm, sometimes preventing drilling in accordance with the blast design. As the fully automated, computer-controlled drill jumbo cannot make fine adjustments, Ryo Nakano devised a method using three preset drilling patterns. Before drilling, the distance between the tunnel face and the booms is measured, and a pattern set for 40, 60, or 80 centimeters is selected accordingly. This method has achieved drilling results, including overbreak control, comparable to those of highly experienced workers.



Takashi Mega
Deputy Senior Manager

Machines as models for learning

With workforce shortages threatening future disaster recovery and infrastructure development, the government is promoting automation to maintain construction capacity. In 2024, the Ministry of Land, Infrastructure, Transport and Tourism launched i-Construction 2.0 to advance construction-site automation. Under this initiative, mountain tunnel projects are testing automation and other labor-saving technologies under actual site conditions. The projects use the Technical Proposal Evaluation Type SI method, which allows up to 5% of the estimated project price to fund improvements promoting the development and adoption of new technologies.

Kajima is participating in the Shin-Anama Tunnel project in Shimamaki, Hokkaido, an FY2025 trial project. It will first introduce remote erection of steel supports, its core proposal, then phase in A⁴CSEL for Tunnel technologies for drilling, surface trimming, and other processes.

Mega says, "Automation can reduce workforce requirements only when applied across the entire construction process. We will use knowledge gained on-site to improve productivity and safety while advancing the construction capabilities that underpin our value as a construction company." As workforce shortages make transferring specialized skills to the next generation increasingly difficult, knowledge gained from developing and applying A⁴CSEL for Tunnel will become a valuable asset. Hiroki Okano, project manager at the Sasson Tunnel Hoshioki JV Civil Engineering Project Office, says, "As the skilled workforce declines, sites may have far fewer opportunities to compare and verify automated construction technologies. Achieving this level of automation could open a new approach to developing people, with workers learning these skills from the machines themselves."

Feature 3

Global technology marketing pioneered by The GEAR by Kajima



The GEAR by Kajima members who are taking on the challenge of creating new value

Kajima uses the Group's construction technologies and R&D achievements to tackle overseas market challenges and create new business opportunities.
The GEAR by Kajima (TGK) draws on Kajima's longstanding presence in Singapore and trusted institutional ties to advance proof-of-concept projects, collaboration, and commercialization through open innovation and technology marketing.

Background to the establishment of TGK

Kajima has long been engaged in building construction and real estate development in Southeast Asia. In 1988, Kajima established its regional headquarters in Singapore. Today, Kajima Asia Pacific Holdings (KAP) operates across eight countries and regions. In 2013, Kajima established Kajima Technical Research Institute Singapore (KaTRIS), the first overseas office of the Kajima Technical Research Institute, and has since expanded its collaboration with local research institutions and universities.

In Singapore, Kajima has developed its business aligned with government policies and urban development needs. It has also built strategic partnerships spanning industry, government and academia, including joint research with JTC Corporation (JTC), a Singapore government agency, and collaboration with Singapore Management University, the Singapore University of Technology and Design, and other institutions.

In 2023, Kajima opened its own building, The GEAR, in Singapore. The GEAR is a research and collaboration facility that integrates the functions of Kajima's regional headquarters for Asia, an R&D center, and an open innovation hub, while also serving as a testbed for new technologies and solutions. Initially, Kajima Development (KD), the developer and operator of The GEAR, played a leading role in promoting Kajima's technologies and business activities, enhancing the Kajima Group's profile in Singapore. Through events and dialogue with stakeholders, new business opportunities for Kajima's technologies began to emerge. To further advance these activities, TGK was established in August 2024 under Kajima Asia Pacific Holdings (KAP), Kajima's regional headquarters in Singapore.

Role of TGK

One of TGK's key roles is to promote open innovation. By leveraging The GEAR, TGK expands its network of startups and other organizations, creating opportunities for them to collaborate with KaTRIS and companies across the Kajima Group. TGK also hosts the Future City Festival (FCF), an innovation summit focused on the future of cities and construction. Bringing together participants from industry, government, and academia, the event provides a platform for collaboration and co-creation. In addition, through its proprietary startup support program "The GEAR Startup CoLab," TGK is building a framework that enables startups to commercialize their technologies into viable businesses.

Another key role is technology marketing. In Singapore, labor shortages have heightened interest in construction automation, and Kajima's A^{4}CSEL® (Quad Axel) automated construction system is attracting significant attention. TGK signed a joint research agreement with JTC, and a research project is currently underway. The project is regarded as an important step toward the future deployment of Kajima's technologies.

TGK is also extending the open innovation expertise and networks developed in Singapore to other international locations, fostering new opportunities for global collaboration and innovation. Working closely with Kajima Australia and Kajima U.S.A., TGK helps create collaboration opportunities for joint research, technology demonstrations, and talent development.

Building on the business foundation and trusted relationships established in Singapore, TGK will continue serving as a bridge between Kajima's technologies and global markets, driving the creation of new value.



Global training program for students from Hong Kong and Singapore



Booth exhibit at a technology exchange event on heat stress

Interview

Serving as a bridge between Kajima's technologies and global markets



Luke Wu
The GEAR by Kajima
Managing Director

I joined the Kajima Group in 2021 and was involved in the establishment of TGK after spending one year at KaTRIS, where I gained firsthand exposure to Kajima's technologies, and two and a half years at KD, where I helped develop The GEAR from its early stages.

Kajima's strength lies in its extensive portfolio of technologies and proven track record in Japan. These technologies address a wide range of challenges, including labor shortages, including labor shortages, improving productivity and safety, decarbonization, and increasingly severe natural disasters, decarbonization, and increasingly severe natural disasters. I believe we can further strengthen our ability to identify opportunities in global markets. TGK aims to create new value by aligning Kajima's expertise with market needs, expanding the reach of our technologies while also incorporating developments from around the world back into the Kajima Group.

Through technology marketing, TGK supports technologies such as A^{4}CSEL, infrastructure monitoring systems, and low-carbon construction materials from opportunity development and demonstration through deployment, in collaboration with the Kajima Technical Research Institute and the Kajima Group's civil engineering, construction and development divisions. In open innovation, we continue to cultivate the ecosystem by maintaining strong relationships with government agencies, universities and startups, while evaluating the potential application of new startup solutions across the Kajima Group's businesses.

TGK is currently deepening collaboration with Kajima's Innovation & Incubation Office in Japan. By drawing on the networks and expertise developed in each region, we will work together to create new value.

Going forward, we will continue to strengthen TGK's role as a bridge to market needs, contributing to the further growth of the Kajima Group's overseas business.

Column

Fostering a culture of innovation through Gemba Centric Innovation

Innovation & Incubation Office was founded in 2021 with the mission of making Kajima and the industry more innovative. We define innovation as discovering challenges or needs where we have not noticed or uncovering value we have given up, and solving those problems. Our role is to identify and organize the needs across society, customers, Gemba (jobsite), and various divisions and to explore knowledge, such as technologies and expertise, that connects to these needs, and work closely with Gemba and relevant divisions to solve them. At the same time, our exploration often leads us to technologies and knowledge we had not previously considered. In such cases, we take an active role in developing new technologies and exploring new business opportunities. Gemba Centric Innovation is our core strategy, where it plays a big role in this initiative.

Necessity to solve the problem is the key to Innovation. That is why we focus on needs. The needs are found in Gemba. That is why innovation happens in Gemba. Disruptive technologies, such as robotics and AI, are not the only innovation. We highlight solving everyday challenges with ideas and efforts as a key role to innovation.

While advancing the research and technology development, bringing the Gemba Centric approach complements the overall innovation initiative. This is Kajima's way. Through this journey, we aim to cultivate an innovative culture where all of Kajima colleagues embrace challenges.

Looking ahead, we aim to deepen the collaboration with TGK to connect Gemba-driven ideas with global technologies, talent, and networks, creating innovation that is uniquely Kajima's.



Dai Ohama
General Manager,
Innovation & Incubation Office