Marketing and Sales Division

Accomplishing the goals of the Medium-term Business Plan is the primary objective of this division. Our main activities are planning and implementing strategies for capturing orders for the whole Group while working with in-house companies.

One of our priorities is the receipt of large orders involving the Expressway Renewal Project. Maintaining a relatively consistent level of quarterly construction sales is another goal. This requires the proper overall balance of orders while receiving small and midsize orders from national and local governments concerning the policy of Building National Resilience. I believe the business climate for new orders will be favorable in FY2024, with some variations among different regions of Japan. We will continue to be selective about the orders we receive by emphasizing profitability while optimizing the assignments of engineers as needed. We will also take on new challenges involving technological advances and diversification of types of work in the field of infrastructure maintenance. Activities are aimed at upgrading our technologies and our construction capabilities as well as the skills of our people. Another key role of this division across the organization is digital transformation initiatives for building an even stronger base for our business operations and managing construction sites more efficiently.

Takayasu Shimada

Director of Business Strategies,
SHO-BOND Holdings Co., Ltd.

Managing Director and General Manager of
Marketing and Sales Division,
SHO-BOND CORPORATION

Risk and Opportunity in the Japan Construction Business

[Risk factors]

- Shortage of construction workers due to Japan's falling population
- Risk involving accidents and other aspects of safety
- Quality management risk involving defects and other problems
- Intense competition for orders in the Expressway Renewal Project

[Opportunities]

- Growing demand for long-life construction due to accelerated measures to address aging infrastructure.
- Growing demand for reinforcement due to the greater severity and frequency of natural disasters
- Increasing importance of infrastructure preventive maintenance technologies

Strengths

- Comprehensive infrastructure maintenance capabilities from a broad range of perspectives
- Accomplishments spanning 65 years as a specialist in the field of infrastructure maintenance
- Construction skills and technologies available to provide the best methods for repairing various types of damage

Materiality

Activities of the Marketing and Sales Division reinforce the comprehensive maintenance system by utilizing the strengths of the entire organization of the SHO-BOND Group. In addition, digital technologies are improving the efficiency and productivity of on-site management.

Major Activities

For large-scale construction projects of ¥2 billion or more, the Large-Scale Construction Management Committee conducts pre-order examinations within the Group. The approaches to using a JV and challenging projects are also discussed. In FY2023, orders were down significantly, partly due to a decline in bridge repair work from some expressway companies. Despite this downturn, there was a construction gross profit mainly because of the receipt of additional orders caused by a large volume of design changes at ongoing projects.

In FY2024, we will work on complex construction and JV projects while maintaining our selective stance regarding new orders, aiming to achieve our construction order plan of ¥81 billion. I believe the key to accomplishing this goal are effective information acquisition and optimized resource allocation.

To motivate employees to develop innovative materials and increase sales, we have established several award systems. In addition, we have built integrated sales channels within the Group to maximize sales of construction materials.

Digital Transformation Activities

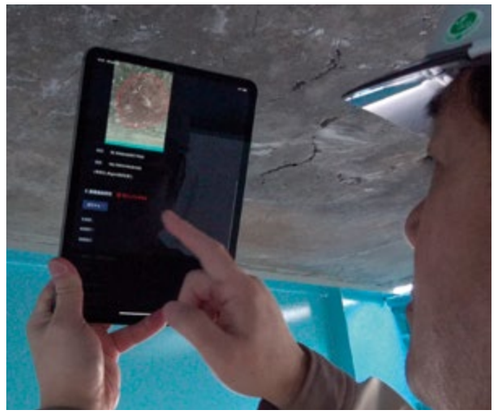
The DX Promotion Office was established within the Marketing and Sales Division in 2021 to keep up with the rapid speed of digitization. Leading and supporting cross-departmental digitization to increase the efficiency of construction site management and strengthening the base for business operations are the main roles of this office.

A Stronger Foundation

Activities of the DX Promotion Office are centered on the effective utilization of data accumulated within the Group and the use of AI. The development of *AI Shindanshi*, an AI system that reproduces the advanced deterioration diagnosis technology of the Group's engineers, was finished in FY2022. In the future, SHO-BOND hopes to use *AI Shindanshi* to help local governments, private-sector companies, and organizations in other countries that have a shortage of engineers to place construction orders.

Data science and AI programming training programs are helping to increase the speed of the digital transformation at the Group.

An example of an *AI Shindanshi* display



Using *AI Shindanshi* at a job site

Events in other countries to explain *AI Shindanshi*'s features

Higher Efficiency to Respond to the New Overtime Restrictions

Starting in April 2024, construction companies in Japan will have to comply with a limit on overtime working hours. In the construction industry, companies are using IT to manage construction sites more efficiently. This will require verifying and using new software as well as developing applications specifically for the characteristics of the infrastructure maintenance business.

Space is extremely limited at infrastructure maintenance job sites because work must be done in tight spaces at a diverse array of existing structures. Furthermore, this type of work is characterized by constantly changing processes for completing projects. As a result, the use of machines and unified work processes is usually not practical. At the Group, the digital transformation does not entail large-scale initiatives like automated construction work and urban OS (a platform for data). The objective is to create a unique-style of the digital transformation that unifies the common parts of various sites of SHO-BOND.

East Japan In-house Company

During the current Medium-term Business Plan, our central goal is to build a robust foundation for the future to become a company that can keep pace with changes in the business climate. Under this basic policy, we have established and are pursuing a business strategy named "Triple P": (1) large-scale projects (Projects), (2) unified actions throughout our company (Policy), and (3) education and training programs (Progress). We will leverage our technologies and aim for more progress that connects to future generations.

One aspect of these activities is joint ventures with bridge manufacturers to take on large expressway projects. This collaboration started in the Tokyo area and has been producing benefits. We plan to expand collaboration activities to the Tohoku region next. Progress will require a construction framework and technologies capable of handling large projects. The employees of partner companies are receiving construction management training at SHO-BOND's Tsukuba Training Center. In addition, we will increase the emphasis of R&D activities on improving the efficiency of construction processes and the quality of our work.

Noriyuki Hosaka

Senior Managing Director and General Manager of the East Japan In-house Company, SHO-BOND CORPORATION

Major Activities

Recruiting and training people from other countries is an important part of "Triple P" activities concerning education and training programs. There are currently five non-Japanese employees at the East Japan In-house Company. They are assigned to three departments including construction, sales, and technology, with the expectation to cope with future changes in the business environment and play wide range of important roles, including in Japan and overseas.

An order for maintenance of the Tengu Bridge on the Tohoku Expressway received by a SHO-BOND joint venture with a bridge manufacturer demonstrates the benefits of measures taken for large-scale projects. The project involves a rigid frame bridge with V-shaped piers in a mountainous location. We are making the best of our technical skills and know-how to meet the demands of seismic reinforcement to preserve the attractive profile of the bridge and ensure the ease of subsequent maintenance work.

Non-Japanese employees

The Tengu Bridge on the Tohoku Expressway

Topic

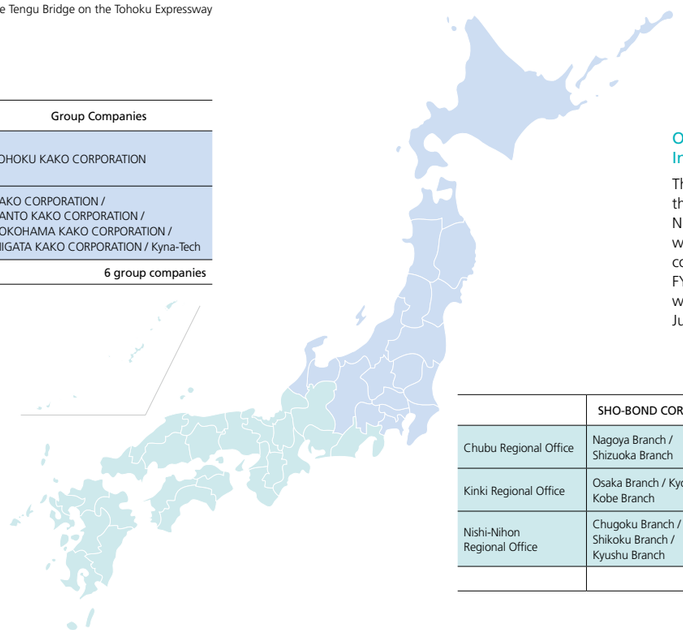
The East Japan In-house Company has a strong commitment to R&D to improve construction site efficiency and quality. One highlight is the development of a temporary support jack with a movement restriction function, resulting from cooperation between job site personnel and the Technical Research Institute. The jack is used to replace bearings between the piers of a bridge and its deck. This innovation greatly reduces the risk of a bridge deck collapse in the event of an earthquake during the jacking process. Furthermore, construction is faster and less expensive because several bearings can be replaced simultaneously. Increasing the use of this jack is expected to further differentiate SHO-BOND from competitors.

An installed jack featuring a movement restriction function

	SHO-BOND CORPORATION	Group Companies
Kita-Nihon Regional Office	Hokkaido Branch / Minami-Tohoku Branch / Kita-Tohoku Branch	TOHOKU KAKO CORPORATION
Shutoken Hokuriku Regional Office	Tokyo Branch / Chiba Branch / Kanto Branch / Hokuriku Branch	KAKO CORPORATION / KANTO KAKO CORPORATION / YOKOHAMA KAKO CORPORATION / NIIGATA KAKO CORPORATION / Kyna-Tech
	7 branches	6 group companies

Overview of East Japan In-house Company

The East Japan In-house Company consists of the Kita-Nihon Regional Office and Shutoken Hokuriku Regional Office. The operations of the regional offices include KAKO-Group companies and the Shutoken Hokuriku Regional Office also encompasses Kyna-Tech. Overall, this company is responsible for operations in Hokkaido, Tohoku, Kanto, and Hokuriku. Sales in FY2023 were ¥38.2 billion and there were 405 employees as of the end of June 2023.



West Japan In-house Company

West Japan In-house Company is now in its fourth year of operation. Initially, our primary goal was fully utilizing the advantages of the in-house company structure to improve order management and organizational operations to handle even larger projects. Today, we are investing in human resources with emphasis on "maintaining growth," "strengthening our base," and "educating employees." I believe that creating and providing more pleasant and productive workplaces for each employee will strengthen our base of operations and lead to further growth.

Large-scale orders from expressway companies are regarded as a project for the entire in-house company. These projects require an optimal construction framework and staffing. To accomplish this and provide outstanding quality, we will coordinate closely with deployment technicians and partner companies, regardless of the jurisdictional areas of the three branch offices.

Tsuyoshi Koga

Senior Managing Director and General Manager of the West Japan In-house Company, SHO-BOND CORPORATION

Major Activities

Human resource investments are one of the highest priorities of West Japan In-house Company. Training programs and support for earning professional qualifications are two major activities. Training by senior employees in various fields is conducted face-to-face and online to achieve a better understanding. For qualification-earning support, we have designed a system that allows employees to receive support and help from individuals who have passed the exams already.

This method enhances the motivation of both sides and contributes to the advancement of the whole Group as well.

Furthermore, we aim to create a culture of safety with our partners by sending employees from SHO-BOND and partner companies to the Tsukuba Training Center to improve each other's safety awareness and technical skills.

Overview of West Japan In-house Company

The West Japan In-house Company has three regional offices (Chubu, Kinki, and Nishi-Nihon) and each office is affiliated with KAKO-Group companies. Operations cover south and west Japan. Sales in FY2023 were ¥36.2 billion and there were 393 employees as of the end of June 2023.

	SHO-BOND CORPORATION	Group Companies
Chubu Regional Office	Nagoya Branch / Shizuoka Branch	CHUBU KAKO CORPORATION
Kinki Regional Office	Osaka Branch / Kyoto Branch / Kobe Branch	KANSAI KAKO CORPORATION
Nishi-Nihon Regional Office	Chugoku Branch / Shikoku Branch / Kyushu Branch	CHUGOKU KAKO CORPORATION / SHIKOKU KAKO CORPORATION / KYUSHU KAKO CORPORATION
	8 branches	5 group companies

Topic

The West Japan In-house Company held its first symposium for women in administrative positions. Participants came from the three regional offices and the General Affairs Department of the head office. Based on the results of a preliminary questionnaire, participants shared thoughts about working more efficiently, dealing with various issues, working styles and career paths for women, and other subjects. There was also an opportunity to talk with the in-house company general manager. Participants reported learning about the operations of other offices and changing their thinking about career advancement after listening to the general manager and the female General Affairs Department manager. More of these activities will take place to enable women to realize their full potential and career goals.

The symposium for women in administrative positions

Engineering Division

The roles of this division are collecting information about infrastructure maintenance technologies, developing new technologies, and overseeing the activities of technology units throughout the SHO-BOND Group.

Constantly upgrading the technological skills of employees is essential as the Group takes on projects that are even larger and more complex. Advances are backed by measures for the fusion of existing technologies at the Group and digital technologies through digital transformation. I think the Digital Transformation Technology Committee, which was formed two years ago, is steadily producing benefits in terms of improving the technical level of employees. The development of new technologies takes place mainly at the Technical Research Institute. We are creating organic/inorganic materials and innovative construction methods in which these materials are utilized while targeting the needs of job sites. We also aim for the realization of a decarbonized society through our unique technological development activities.

Hiroshi Takemura

Director, General Manager of Engineering Division,
and Director of Technical Research Institute,
SHO-BOND CORPORATION

Strengths

- Combining chemical and civil engineering technologies to create new technologies
- Construction methods and materials specialized in repair and reinforcement
- Accumulated technological development capabilities and knowledge centered on the Technical Research Institute

Materiality

Starting with the unique perspective of the fusion of chemical and civil engineering technologies, the Engineering Division utilizes 3D technology, AI, and many other advanced technologies. All activities have the goal of more efficient construction processes and higher productivity throughout the Group. The division has started programs involving the SDGs, such as research involving environmentally responsible organic materials.

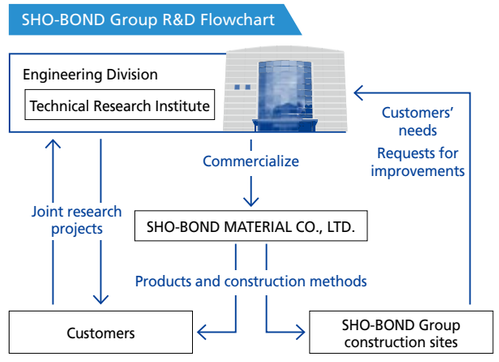
Major Activities

The scale and technological complexity of infrastructure maintenance work is increasing in Japan as progress continues with the Expressway Renewal Project. To perform this type of work even better, SHO-BOND established a committee to study and review how to deploy digital technology in the infrastructure maintenance field and started a program where employees can learn 3D CAD, finite element method (FEM) analysis and other advanced skills to raise the technical skills of all employees and improve productivity. Next, we plan to learn how to improve construction planning and management using 3D point cloud data, AR, VR, and other technologies, as well as FEM nonlinear analysis. At the same time, programs for earning professional qualifications have been strengthened. There are also many types of training programs for mid-career and young employees, female engineers, and other categories of employees.

For the deployment of AI, we developed a system called *AI Shindanshi*, which is an AI diagnosis system incorporating AI that can help engineers without maintenance knowledge check the level of degradation of concrete structures. In the future, we will develop other AI assistant tools for engineers at job sites.

In addition, by cooperating with the Technical Research Institute, we are developing DIY construction methods and materials that allow property management personnel and others at local governments and companies to perform small repairs on their own.

SHO-BOND Group R&D Flowchart



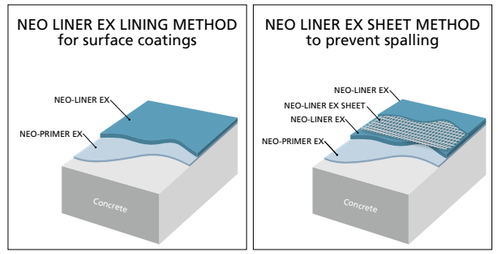
SHO-BOND Innovations

Labor-Saving Surface Coating Method Using Water-Based Resin (NEO LINER EX METHOD)

The corrosion of rebar and degradation of concrete, causing pieces to fall off, are problems with the aging infrastructure constructed in Japan during the rapid economic growth period. Over the years, surface coating and spalling-prevention methods have been used. However, the numerous and time-consuming steps required by these processes make them unsuitable for bridges and other locations with time restrictions. A new method that can be completed faster was needed.

SHO-BOND responded to this challenge by creating a revolutionary labor-saving coating method with fewer than half the steps required by conventional methods. Moreover, the use of the same substance for surface coatings and spalling prevention reduces the amount of unused and discarded materials. Using a weather-resistant water-based resin (NEO LINER EX), that can integrate an intermediate coating and top coating, shortens the process. This method is also environmentally friendly because it reduces odors and volatile organic compound (VOC) emissions.

This new coating method has much potential as a technique for extending the lives of concrete structures in a labor-saving and environmentally responsible manner.



Thickener Permeable Rust Prevention Agent for Rebar (SBLN GEL)

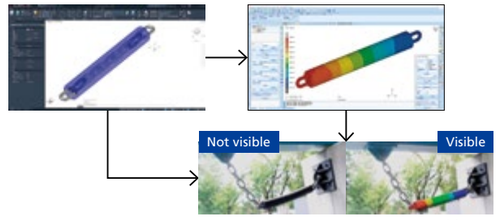
Less than 10 years from now, more than 60% of the highway bridges in Japan will be at least 50 years old. Maintenance for a longer life is urgently needed. As one way to meet this need, SHO-BOND developed SBLN GEL, a thickener permeable rust prevention agent containing a large amount of lithium nitrite, which is effective at preventing the rusting of rebar. The gel-like substance can be simply applied to concrete. SBLN GEL then soaks into the concrete, resulting in a large volume of lithium nitrite reaching the rebar quickly. Corrosion of the rebar can be prevented for a long time, even in concrete structures vulnerable to salt damage and carbonation. SBLN GEL received building construction technology certification from the Japan Construction Information Center (JACIC) in March 2023. There are expectations for this new technology to play an important role in extending the lives of many buildings and civil engineering structures.

Application of SBLN GEL on a concrete structure

Augmented Reality (AR) for More Efficient and Labor-Saving Construction Management

As the digital transformation of the infrastructure sector advances, the Ministry of Land, Infrastructure, Transport and Tourism made the use of building/construction information modeling (BIM/CIM) mandatory in the 2023 fiscal year. As the use of BIM/CIM grows, almost anyone at a construction site will soon be able to easily read blueprints and other drawings. At the Group, technicians are using 3D scanners to measure structures, generate point cloud data as polygon mesh models, and create 3D data of fabricated parts to be installed on existing structures. By displaying these data on-site using AR technology, we can make construction management tasks more efficient. For example, AR display at construction sites makes it possible to confirm if different materials are interfering with each other and to simulate the transportation of manufactured parts. In repair and reinforcement projects, where the placement of large materials and items with complex shapes at the construction site is often required, AR simulations conducted before the actual work are very helpful. AR displays that include results of FEM analysis give job site personnel a picture of how installation parts will function. Displays also provide visualization of tasks requiring caution during construction to make everyone aware of the need for safety measures.

3D CAD



AR image

Construction Division

This division is responsible for working with the regional offices that manage construction sites to continue making improvements to the quality of our work and safety at these sites. Construction staff assigned to construction sites are more than half of the 985 employees of the SHO-BOND Group. These people perform the critical role of interacting directly with customers to complete projects that meet customers' expectations and generate earnings for the Group.

Construction know-how acquired over many years of performing small repair and reinforcement projects is a major strength of SHO-BOND. As a specialist in maintenance, we have decades of experience with earning a suitable profit from performing small jobs. This gives us a corporate culture that differs greatly from those of other construction companies. Construction projects have been becoming larger and longer year after year. Nevertheless, small jobs are at the heart of repair and reinforcement work. We are utilizing the expertise we acquired from these jobs to maintain a high profit margin as we handle many large projects. I want to be certain to pass this distinctive tradition on to our young engineers to maintain and strengthen our competitive edge as a leader in the field of repairs and reinforcement.

Tsuneyuki Ashizawa

Senior Executive Officer,
General Manager of Construction Division,
and Director of Tsukuba Training Center,
SHO-BOND CORPORATION

Strengths

- A strong team of engineers capable of earning profits from even small projects
- Large network of partner companies with experienced people covering a diverse array of construction skills
- Close relationship with factories that fabricate steel components one by one to match the requirements of individual projects
- Low cost of construction by performing projects requiring specialized skills without using subcontractors

Materiality

The Construction Division uses expertise accumulated over many years as a specialist in infrastructure maintenance to create construction plans that are safe and efficient. In addition, we perform special construction internally and use other strengths to hold down the cost of construction and raise productivity. Our mission is to use the best methods for maintenance and repair projects of all sizes, from large expressway bridges to small pedestrian bridges, to contribute to the development of sustainable cities.

Major Activities

All companies of the Group place priority on passing on repair and reinforcement technologies backed by many years of experience to the next generation of construction engineers. The Tsukuba Training Center offers many types of training programs for newly hired employees, partner company employees and others. In FY2023, we conducted more than 100 training programs. Successful repair and reinforcement work requires the efficient planning and execution for small projects. Giving engineers the skills to carefully plan and construct each stage of a project and make it profitable will lead to the efficient management of large-scale construction projects. Furthermore, as many employees are assigned to large projects, each person's role must be clearly defined. The site manager is responsible for the oversight and guidance of younger engineers. To pass on construction skills efficiently, education programs are customized to match specific projects. Cost reduction in repair and reinforcement projects is another priority. One way is to perform internally specialized construction methods for repair and reinforcement tasks. Furthermore, we analyze a broad range of construction processes to determine cost-reduction methods for each one that can be used throughout the Group. For example, the group company Kyna-Tech makes it possible to perform work requiring high-pressure water jets internally. Furthermore, we will use IT tools more widely to increase efficiency and productivity, as well as to comply with the upper limit on overtime work in construction industry that will begin in April 2024.

SHO-BOND Construction Sites

Replacement of Bridge Bearings

Bearings are a vital component of bridges that link the deck of a bridge with its piers. Timely replacements are essential because the potential inability of old bearings to withstand a major earthquake could cause a bridge to collapse. For safety, replacements must be done in accordance with an earthquake-resistant plan. To replace bearings without disrupting traffic on a bridge, work must be performed safely while raising the deck using jacks and other equipment. Projects of this type require highly advanced skills.

A bridge with new bearings in place

One step of the bridge-bearing replacement process

Prevention of Concrete Spalling

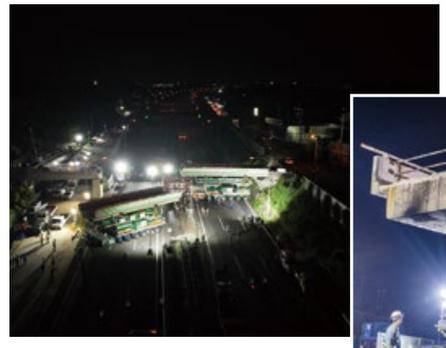
As concrete ages, water, salt and other substances can seep in through cracks, causing corrosion and expansion of rebar within the concrete. If nothing is done, this can result in an accident when chunks of concrete fall off. The Group has performed a large number of projects that involve the application of sheets to prevent this problem.

Applying a sheet to prevent chunks of concrete from breaking off and falling

A section of spalling concrete

Removal of Old Bridges

Of the enormous number of expressway overpasses in Japan, many were built more than 50 years ago and retrofitting is needed for safety during an earthquake and other reasons. In some cases, overpass bridges that are no longer needed are removed instead. The SHO-BOND Group uses its infrastructure repair and reinforcement technologies to dismantle and remove these bridges safely and efficiently.

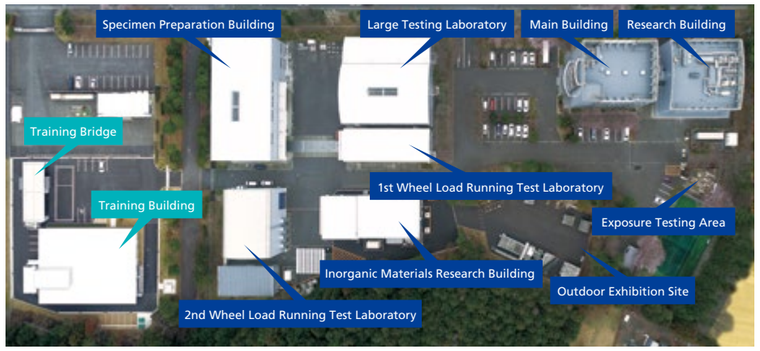


Removal of an expressway overpass bridge

Technical Research Institute

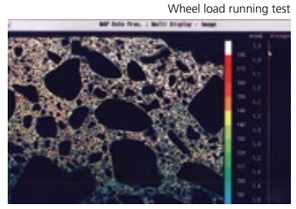
Overview of Technical Research Institute

The SHO-BOND Group has contributed to society through the research and development of its own repair technology, believing that the combination of chemical and civil engineering technologies is important for effective infrastructure maintenance. Technical Research Institute played a central role in this effort. In 1996, the year after the Great Hanshin-Awaji Earthquake, SHO-BOND opened its third research laboratory (with a site area of approximately 22,000 m^2) in Tsukuba Science City. We named the institute the Technical Research Institute based on the philosophy of raising repair skills to the level of scientific research. The institute focuses on clarifying the mechanisms of structural deterioration and damage, improving fatigue durability against large vehicles, and researching and developing effective reinforcement technology for earthquake disasters. The research facility specializing in the repair and reinforcement of structures and equipped with a lot of state-of-the-art equipment is unique in Japan, and many materials and construction methods developed have been adopted as standards for repair methods. The research staff consists of researchers with backgrounds in chemistry (organic materials) and civil engineering (inorganic materials and structures).



Aerial view of the Technical Research Institute and Tsukuba Training Center


Wheel load running test


Example of EPMA analysis

Various Research and Development Themes

In recent years, we have been working on the following research and development themes:

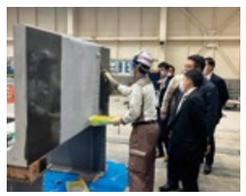
- A transparent concrete spalling prevention method that uses a single pack (pre-mixed) resin which is easy to use and has low cost and outstanding workability
- Development of a surface thickening method combining a permeable water resistance material, an adhesive, and low-elasticity latex-modified fast-curing concrete (CPJ-L)
- Wheel Load Running Test is conducted to confirm the fatigue durability of bridge deck slabs after significantly thickening their surfaces, which have been weakened by years of heavy vehicle traffic

In addition to these themes, we are constantly conducting research and development on several other themes.

In February 2022, the Institute received the Special Award at the First Infrastructure Maintenance Awards from the Japan Society of Civil Engineers (JSCE) for its longstanding research and development activities that have contributed to the development of infrastructure maintenance.


CPJ-L demo attended by customers


Wheel Load Running Test attended by customers


NEO-LINER EX demo attended by customers


Received the Special Award at the First Infrastructure Maintenance Awards from JSCE

Tsukuba Training Center

Motivation for Establishment

Providing Learning Opportunities Based on Practical Training

Recently, a wide variety of structural repair methods, including preventive maintenance, anti-deterioration, seismic reinforcement, and component replacement methods have been developed. Materials have also become diverse, including concrete, steel, resin materials, and new materials such as aramid and carbon fiber. Familiarity with these methods and materials is essential to ensure construction quality. In addition, the Group's abundant proprietary methods and materials are valuable assets, and we consider it an important task to ensure that these technologies are passed on to the next generation. In order for all employees to master these technologies, we decided that a full-scale training center would be necessary because the existing classroom lectures and on-the-job training at construction sites were insufficient. For these reasons, in October 2021 we established the Tsukuba Training Center with an area of approximately 5,000m^2 near the Technical Research Institute.


Full view of Tsukuba Training Center

Concept of the Facilities

The concept of the facilities is to provide classroom lectures on the intention of adopting each construction method and material, points to note in construction, safety, and others, and then to provide practical training during the training period to consolidate the knowledge. With an eye on training not only for our employees but also for employees of domestic and overseas partner companies that have little experience in repair work, we use the same repair objects and materials in the practical training as those at the construction site so that they can experience the feeling of the site. The main facilities are a seminar room, a construction training room, a safety training room (with a real scaffold, mannequins, danger experience equipment, and VR danger experience equipment), and a full-scale training bridge (a two-span simply supported three I-girder bridge).


Training bridge

Overview of the Facilities

■ Training building (total floor space of approx. 1,000m^2)
- Seminar room: A classroom for up to 54 participants
- Construction training room: A seminar room where participants can learn how to handle repair materials
- Safety training room: A seminar room where participants can experience the significance of safety activities

■ Training bridge (10m x 20m)


Practical training in tightening high-strength bolts


Practical training in jacking up bridges


Practical training in making a photographic record of construction work


Practical training in installing seismic retrofitting equipment


Practical training in marking

Maintenance Technology Inc.

Overview

Maintenance Technology Inc., established in 2011, is the only construction consulting company in the SHO-BOND Group. The company has sales offices in Tokyo, Nagoya, and Osaka. The workforce was 23 at the end of June 2023. The main activity is investigation, diagnosis, analysis, repair plans, and other services involving bridges, tunnels, and other public-sector structures under requests from other construction consultants. We also measure structures, analyze resin products, and perform other services to improve the quality of work at our construction sites.

Operations

Structure measurements and 3D CAD data generation using a 3D measuring instrument

Repair and reinforcement work consists primarily of installing or replacing various materials in existing structures. Obtaining accurate measurements is often difficult because existing structures have complex shapes and narrow spaces. We use a recently developed wide-area 3D measuring instrument capable of measuring existing structures quickly and accurately. Furthermore, we also perform tasks such as converting point cloud data obtained from 3D measurements into 2D and 3D CAD formats, enabling us to check data for components in fabrication and component interference levels.

The status of measuring anchor bolt drilling positions using a 3D measuring instrument

Kyna-Tech

Overview

Kyna-Tech became a wholly owned subsidiary of the SHO-BOND CORPORATION in 2016 through acquisition, as part of the Group's strategy to increase profitability and diversify its operations. The company is based in Saitama and had a workforce of 22 as of the end of June 2023. As a specialty construction company, Kyna-Tech enhances the Group's profitability through its expertise in advanced machinery construction technology, including high-frequency core drilling and water jets. Moreover, conducting water jet construction in-house leads to cost reductions and contributes to the profitability of the entire Group.

Operations

High-frequency core drilling at concrete structure

Making anchor bolt holes using high-frequency core drilling is one of the primary activities of Kyna-Tech. When reinforcing an existing concrete structure, holes are drilled for the placement of reinforcing components to increase earthquake resistance. Kyna-Tech's high-frequency core drill can make holes up to 15 meters deep and in a direction that is not possible with conventional machinery. Furthermore, holes are made about 2.5 times faster. Another advantage is being fitted with a safety device, which eliminates the risk of damaging rebar in the concrete structure. Our outstanding technology is essential for supporting the safety and security of infrastructures.

The use of high-frequency core drilling for anchor bolt holes

SHO-BOND MATERIAL CO., LTD.

SHO-BOND MATERIAL is a manufacturer and trading company that supplies a large lineup of products used in repair and reinforcement projects. The manufacture and sale of these construction materials is a key element of the SHO-BOND Group's operations along with the core construction business.

We are focusing on developing and expanding sales channels in new market sectors and getting more customers to accomplish the current Medium-term Business Plan's goal of penetrating and upgrading SHO-BOND technologies by taking on new challenges. Besides standard products, we are focusing on developing customized products to precisely meet customers' requirements, as well as developing and modifying couplings (pipe joints) to cover a broad array of needs.

The demand for structure maintenance will continue to grow. It is our mission to respond to a diverse array of needs related to emergency measures and permanent responses to aging infrastructure and intensifying natural disasters internationally and to help protect these vital lifelines by solving the issues of our customers.

Shigeru Naraoka

President and Representative Director,
SHO-BOND MATERIAL CO., LTD.

Risk and Opportunity in the Construction Materials Manufacturing and Sales Business

[Risk factors]

- High cost of energy, construction materials, and raw materials
- Damage and disruption of operations caused by natural and other disasters at factories of SHO-BOND MATERIAL and its contract suppliers
- Measures needed to cope with the restriction on overtime work concerning logistics starting in Japan in 2024

[Opportunities]

- Growing demand for extending the life of infrastructure as the pace of activities for repairing and reinforcing aging infrastructure increases
- Growing demand for reinforcement work as the frequency and severity of natural disasters increase
- Demand for environmentally friendly products

Strengths

- As a specialist in repairs and reinforcement, the company has a diverse lineup of products for many types of degradation and damage
- Group-wide development capabilities for customizing products to meet specific market demands
- Asset-light manufacturing through a Fabless framework (for structural construction materials and pipe joints)
- Flexible environmental response, such as using non-hazardous organic materials and plant-based ingredients for the fabrication of products to reduce CO_2 emissions.

Major Activities

In addition to conventional products, we are also focusing on sales of new products and construction methods released in the past few years. Shipments of CPJ-L, a low-elasticity latex-modified fast-curing concrete for repairing the upper surface of concrete deck slabs, increased significantly, mainly due to highway repair work by NEXCO. In the future, we will expand the sales of CPJ-L nationwide, including the national and local governments. The Galette Sandwich Method is used to repair concrete block walls along railway lines without removing the existing wall. This reduces waste materials and accommodates restrictions on time and workspaces that are common at railway projects. An increasing number of companies have become regular users of this method, indicating that sales will continue to grow. Regarding couplings, we are working on enhancing our large-diameter couplings and increasing inventories, focusing on the need for repairing water and sewage pipes and water pipe bridges, and for emergency response after water leaks.

We are currently working on solving various challenges, such as large-scale renovation of expressways and railways, by not only developing by ourselves but also collaborating with our customers. We are looking forward to the products that we plan to release in the next few years, and we aim for further growth with the Group companies.

A railway concrete block wall reinforced using the Galette Sandwich Method

A utility water pipe bridge using SHO-BOND MATERIAL couplings

Overview of SHO-BOND MATERIAL CO., LTD.

SHO-BOND MATERIAL CO., LTD. is a core company of the SHO-BOND Group. It was established in July 2016 by the merger of SHO-BOND Chemical and SHO-BOND Coupling and became a manufacturer and trading company that produces and sells resin products, construction materials, and couplings.

Overseas Businesses

SHO-BOND & MIT Infrastructure Maintenance Corporation

SHO-BOND & MIT Infrastructure Maintenance Corporation (SB&M) will leverage the synergy between SHO-BOND's technological capabilities and MITSUI & CO., LTD. (MITSUI) 's network and business development capabilities to provide solutions for infrastructure and private-sector facilities in Japan and overseas, build and develop a new business foundation for the SHO-BOND Group and promote activities that create a safe and secure society.

Risk and Opportunity in Overseas Businesses

[Risk factors]
- Country risk due to economic and political instability
- Uncertainty involving laws and regulations and logistics for shipments of products
- Rising cost of materials and exportation and uncertainty about foreign exchange rates
- Cost competition with local companies and other entrants

[Opportunities]
- Increasing public awareness worldwide of the need for maintenance of aging infrastructure
- Joint activities with other Japanese companies for the dissemination of infrastructure technology proven in Japan
- Growing need for protection against earthquakes, floods, and other natural disasters around the world

Strengths

- The technology development capacity of the SHO-BOND Group for the development and modification of construction methods and products to match the requirements of specific countries and regions
- The global business network and overseas development and management capacity of MITSUI, in 63 countries and 128 business sites

Major Activities

SB&M was established in April 2019 with a 51% stake in SHO-BOND and a 49% stake in MITSUI, with the aim of "creating a sustainable infrastructure society in Japan and overseas with the technology of SHO-BOND." By leveraging the resources of the SHO-BOND Group and MITSUI, in November 2020, we established a joint venture CPAC SB&M Lifetime Solution Co., Ltd. (hereinafter referred to as CPAC SB&M) with a local company in Thailand, and in July 2023, we invested in a U.S. infrastructure repair maintenance company Structural Technologies, LLC (hereinafter referred to as ST). Currently, we are developing infrastructure maintenance business in the ASEAN region and the United States, with the two bases in Thailand and the United States. In addition to supplying construction materials for JICA projects in the ASEAN region and providing on-site construction guidance by our engineers, as part of JICA's international cooperation, we accept trainees from overseas at the SHO-BOND CORPORATION's Technical Research Institute and Tsukuba Training Center to provide lectures, practical training, and tours on the importance of infrastructure maintenance and repair methods.

As the need for structural repair, reinforcement, and seismic countermeasures is attracting attention worldwide, we will create greater synergies and expand our business by combining the knowledge and experience accumulated from operations in Thailand and the United States with SHO-BOND's technology development capability and the business development capability of MITSUI. In addition, amid an increasingly serious global environmental problem and growing shortage of construction workers, we are also promoting business development related to work efficiency through digital technology.

JICA trainees at the Technical Research Institute (above) and SHO-BOND engineers guiding a construction site in Laos (below)

Scene at the Site

Thailand

Thailand is located in Southeast Asia with a land area of about 514,000km² (about 1.4 times that of Japan) and a population of about 66.09 million (about half that of Japan). Many Japanese companies, primarily manufacturers, have operations in Thailand. In Bangkok, the capital city where approximately 10% of the country's population is concentrated, much of the infrastructure was constructed at least 30 years ago, and the problem of deterioration is becoming apparent.

CPAC, with which we established a joint venture in November 2020, is a core company in the building material business under the umbrella of Siam Cement Group (SCG), one of Thailand's leading conglomerates. CPAC SB&M's office is in the Bang Sue district, about 17km away from Bangkok's Japanese quarter. SCG's head office building is also in this area and in front of it is Bang Sue Grand Station, one of the largest terminal railway stations in ASEAN.

We look forward to using Thailand as a base for the growth of the infrastructure maintenance business throughout Southeast Asia.

CPAC Head Office

A construction site meeting

USA

A large percentage of the U.S. infrastructure was constructed many decades ago with some parts dating back to the 1920s and about 40% of the bridges in the United States are more than 50 years old. Over the years, many large bridges have collapsed. Today, there is widespread awareness of the need for maintenance. In some regions, particularly the West Coast, there is also a need to reinforce structures to resist earthquakes.

ST, in which we invested in July 2023, is affiliated with Structural Group, Inc. (SGI), the third-largest concrete construction company in the U.S. by revenue, and specializes in bridges. SGI has a management philosophy of "Making structures stronger and last longer" and has a high affinity with SHO-BOND.

SHO-BOND plans to use its relationship with ST to utilize technologies created and proven in Japan at infrastructure maintenance projects in the United States.

Structural Technologies Corporate Headquarters

A Structural Technologies construction site