



# Medium-term Business Plan

FY June, 2022 - FY June, 2024

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***SHO-BOND HOLDINGS CO., LTD.***

August 10, 2021



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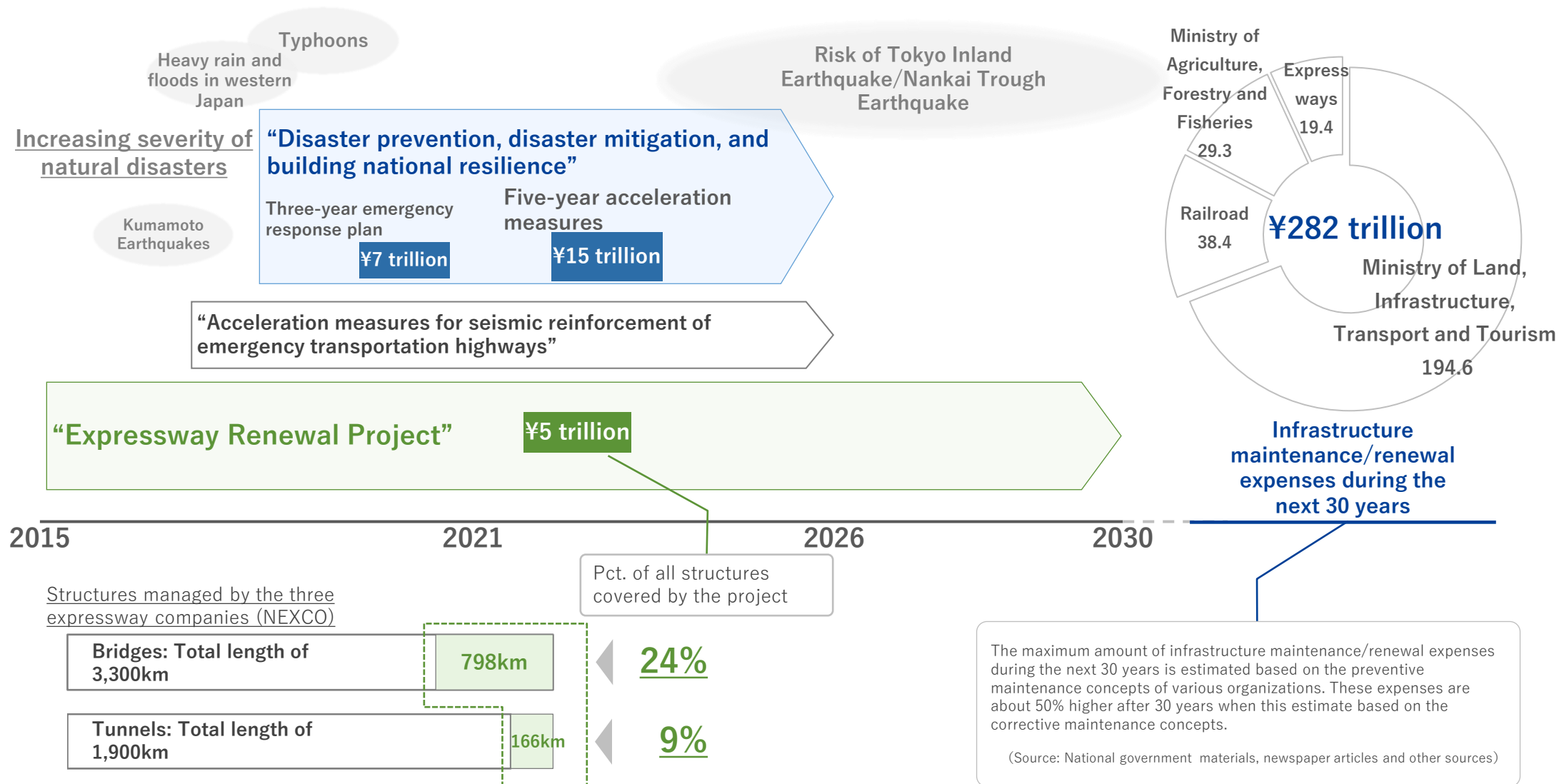
## Medium-term Business Plan

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※Japanese version only



(Source: Social Capital Development Council)

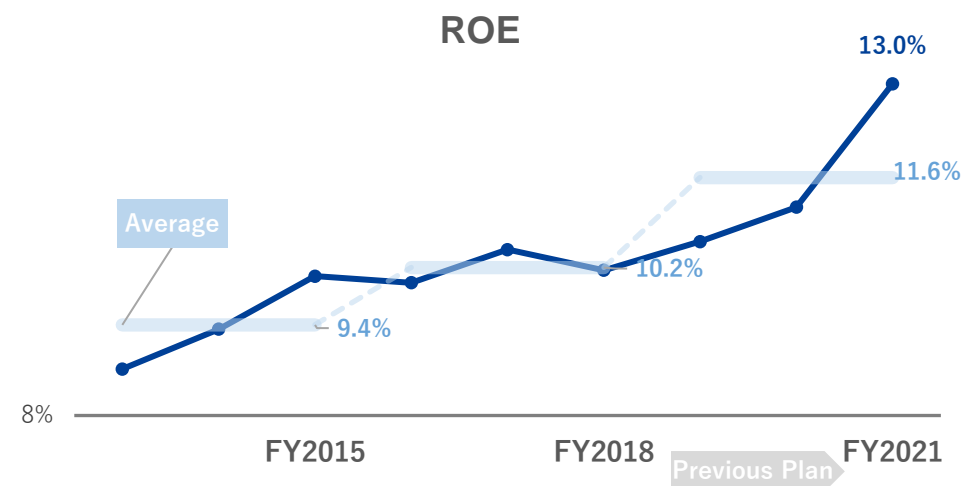
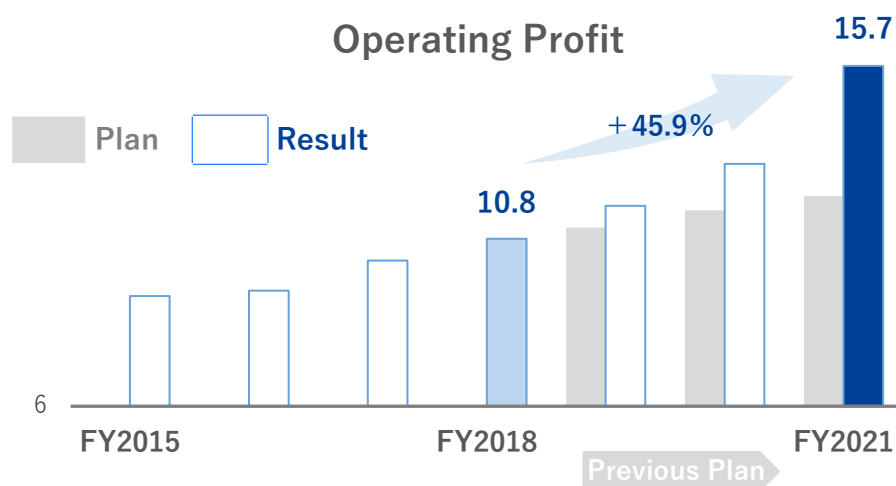
# 0 Summary of the Previous Plan



	FY June, 2018	FY June, 2021		Plan
Sales	59.68 ¥bn	<b>80.07</b> ¥bn	+ 34.2%	67.0¥bn
Operating Profit	10.78 ¥bn	<b>15.73</b> ¥bn	+ 45.9%	12.0¥bn
Operating Margin	18.1 %	<b>19.6</b> %	+1.5%	18%
Profit Attributable to Owners of Parent	7.3 ¥bn	<b>11.34</b> ¥bn	+ 55.3%	8.5¥bn
ROE	10.2 %	<b>13.0</b> %	+ 2.8%	10%
Payout Ratio	46.1 %	<b>50.1</b> %	+ 4.0%	50%

## Big increases in sales and earnings and shareholder returns

During the past three years, Japan's infrastructure maintenance market has expanded significantly mainly because of the large-scale renewal and repair projects of expressway companies and the three-year emergency measures for national resilience to disasters. SHO-BOND established an internal framework for receiving large orders and carefully selected orders to accept while placing priority on profitability. The result was big increases in sales and earnings. Profitability was high with an operating margin of 19.6% and a return on equity of 13.0%.



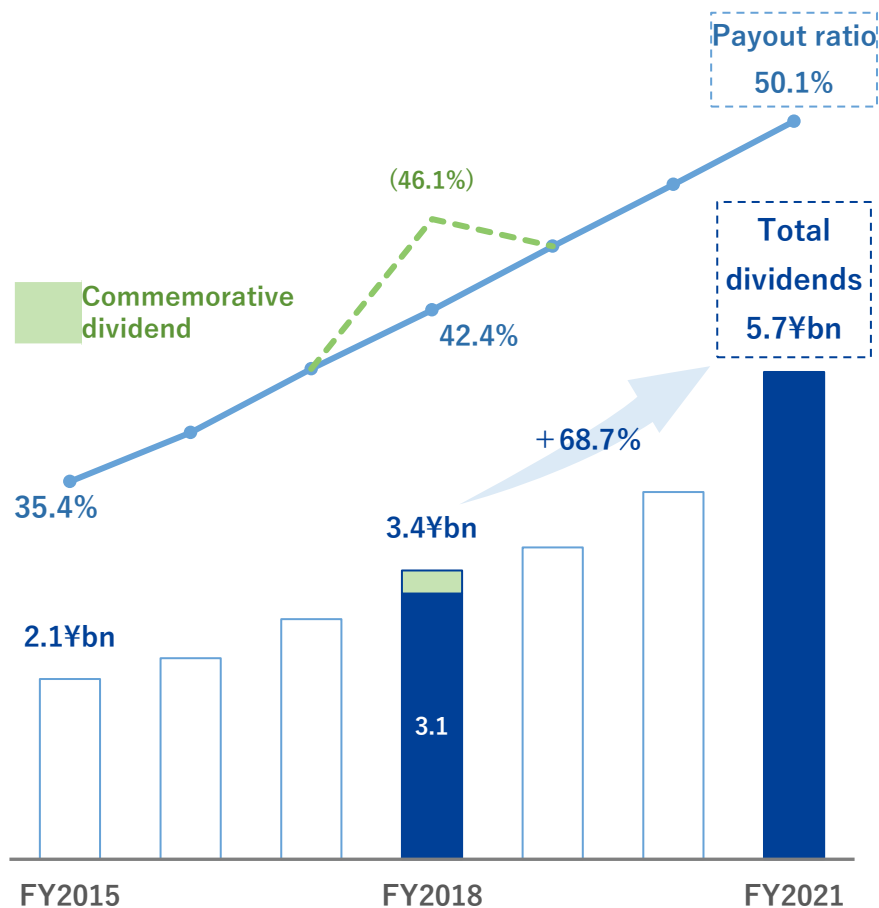


# 0 Summary of the Previous Plan



## Shareholder returns

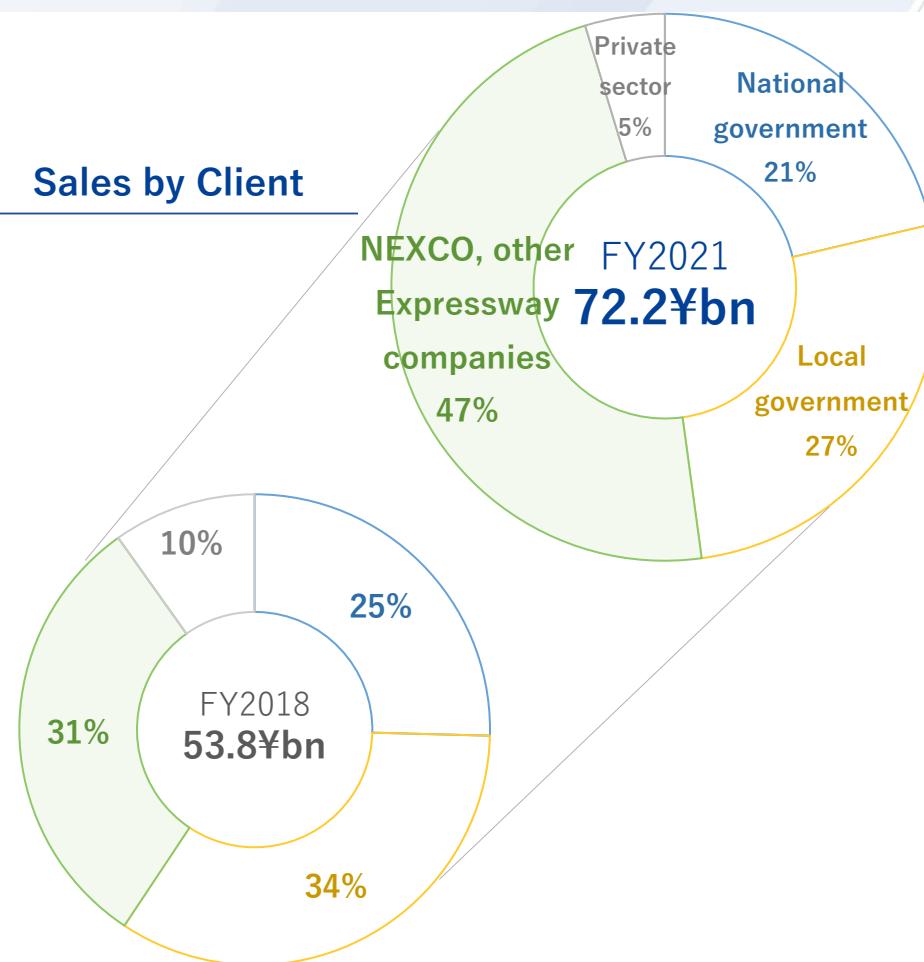
The dividend payout ratio was raised by 2.5 percentage points every year during the plan with an expected ratio of 50.1% in the plan's final year. Shareholder returns have increased 68.7% during the past three years along with the profit growth.



## Construction sales

Expressway companies increased to 47% of all construction sales because of the focus on receiving large orders from these companies.

### Sales by Client

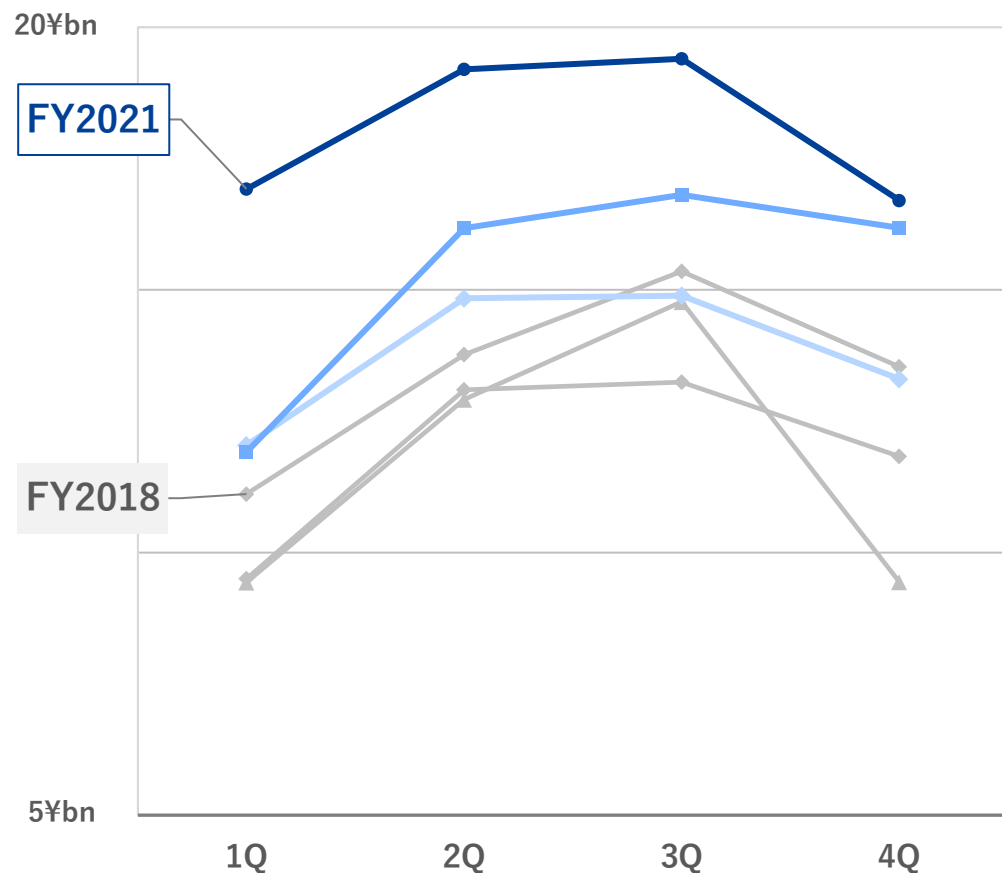


# 0 Summary of the Previous Plan



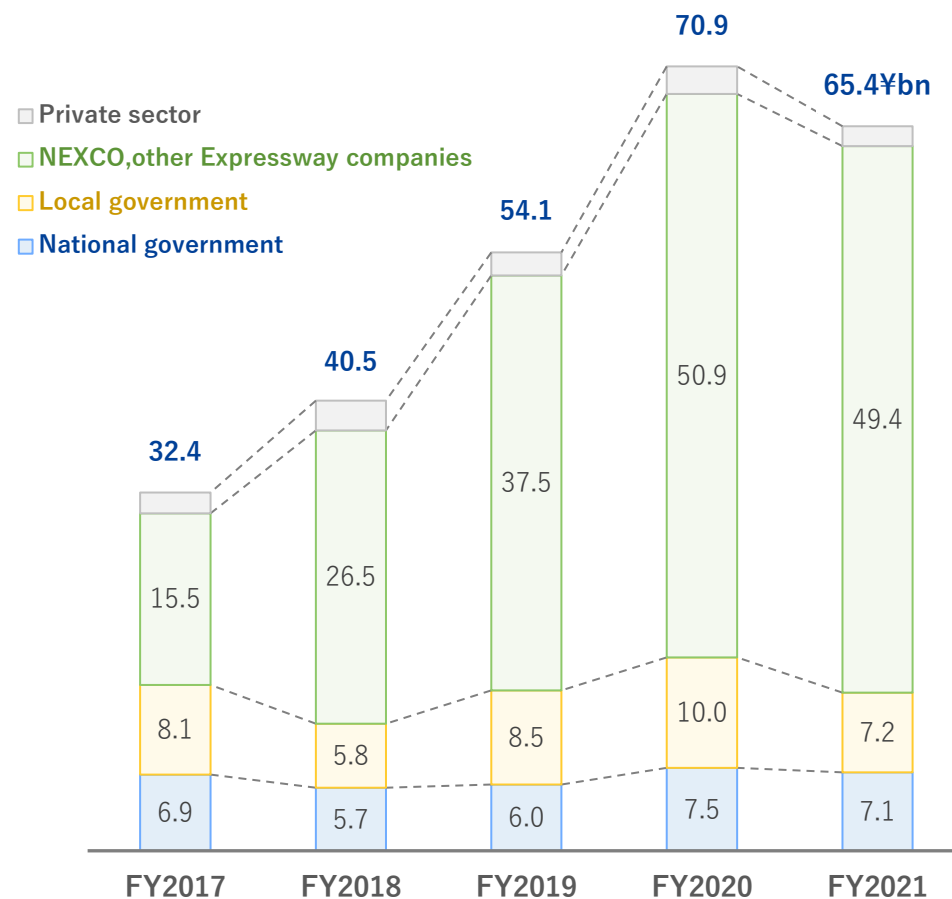
## Leveling construction sales

Progress as planned at large projects reduced quarter-to-quarter differences in construction sales and resulted in a big increase in fiscal year construction sales.



## Order backlog

The fiscal year-end order backlog was higher than one year earlier because of the increase in large orders, mainly from expressway companies. This backlog contributed to the stability of business operations.



# 0 Summary of the Previous Plan



## Five Business Strategies

## Keep challenging as a leading company in the structure maintenance industry

**1** Stable operations backed by priority on profitability by using optimal approaches for new orders and the order/project balance

**2** Reinforce the ability to receive orders involving the large-scale renewal and repair projects planned by expressway companies

**3** Receive more local government orders by reinforcing ties among group companies and cooperation with regional construction companies

**4** More powerful sales operations and R&D that can create products competitive in Japan and overseas

**5** Form alliances and make investments for growth with a focus on leveraging strengths as a company specializing in maintenance

### Summary

Quarterly sales were generally even due to the receipt of orders with the proper balance among large, midsize and small projects while carefully selecting orders to accept based on profitability. Steady increase in the fiscal year-end order backlog contributed to the stability of business operations.

Introducing an in-house company system allowed using an efficient order receipt strategy with a broader regional approach than with the regional branch structure. This strategy generated a big increase in large orders from expressway companies, raising the share of these companies to 47% of all construction sales.

Regional disparity in the order environment widened due to the increasing severity of natural disasters. Consolidated some offices, implemented optimal deployment of personnel between SHO-BOND CORPORATION and regional construction subsidiaries (the Kako Group) in order to strengthen the ability to receive orders from local governments.

SHO-BOND and Mitsui & Co., Ltd. established a jointly owned company called SHO-BOND & MIT Infrastructure Maintenance Corporation (SB&M) in April 2019. At the end of 2020, SHO-BOND jointly established a company in Thailand with a Thai partner company to start overseas sales of construction methods and products.

In both civil engineering and building construction, we continued to work in many ways with other companies regarding joint activities for specific tasks. However, this collaboration has not yet resulted in alliances or investments for growth.

# 0 Summary of the Previous Plan



## Five Stronger Foundations for Growth

## The people and technologies needed for sustained growth

**1** Build a stronger framework for improving technologies, safety and quality and expand the workforce

**2** Identify distinctive requirements in every aging infrastructure category and perform R&D for new products and construction methods

**3** Improve productivity by making extensive use of “i-Construction”

**4** Working style reforms and “8 days off in 4 weeks”

**5** More ESG activities and measures to further strengthening corporate governance

### Summary

The workforce increased by 97 during the past three years, including more people for construction, engineering, safety management and other jobs for enhancement of operational capability. Health and safety management is becoming increasingly important at SHO-BOND because of the steady growth in the number of large projects every year.

Planned to develop 10 products during three years involving highways, railways, harbors, buildings and other market sectors. Nine of these projects have been completed. Constructed an inorganic research building at the Technical Research Institute and research is under way for inexpensive construction methods for small/midsize bridge repair projects.

Started work on developing an AI system for selection of repair construction methods and for detecting the improper use of safety belts. Also considering the development of a field worker health management system using AI.

Many activities for working style reforms at all group companies, including quarterly reports to the Executive Committee about working hours and the use of vacation days. Reduced to less than 1% the number of employees with fewer than 100 days off in a year. In FY2020, 98% of construction sites had six days off over four weeks and 73% had eight days off over four weeks. (Japan Federation of Construction Contractors data)

Established a Nomination and Remuneration Advisory Committee, Internal Control Committee and Asset Management Committee and took other actions to strengthen governance. Acquired ISO9001 (quality management), ISO14001 (environmental management) and ISO45001 (occupational health and safety) certifications. SHO-BOND CORPORATION received Kurumin certification as a company that provides childcare support for employees.



# Medium-term Business Plan

FY June, 2022 - FY June, 2024



## Corporate Philosophy

With a sense of mission of “Inheriting and passing on social infrastructure to the next generation in good condition,” we will contribute to the realization of a safe and affluent society by utilizing our advanced technological development capability as a leading company in the structure maintenance business.

## Our Vision

**Fulfill our mission as a company specializing in maintenance**

Be a technology-oriented organization that combines chemical and civil engineering technologies to create new materials and construction methods

**Place priority on profitability and efficiency**

## Materiality

Comprehensive maintenance system backed by the organizational capabilities



Productivity improvement through technology development



Sound governance and measures for more improvements



Contribution to the development of sustainable cities



Effect of business activities on society

**Internal activities**

Effect of business activities on society



The SHO-BOND Group has designated four materialities based on social demands and the expectations of stakeholders.

The materialities are our priorities in order to achieve sustainable growth with our stakeholders as the SHO-BOND Group plays a role in solving social issues while continuing to increase corporate value.

The materialities involve internal activities and how business activities affect society. We believe that all of these activities contribute to accomplishing the Sustainable Development Goals and achieving the SHO-BOND Group's Corporate Philosophy.

The SHO-BOND Group will continue to leverage business activities for constant progress concerning these materialities in order to contribute to long-term sustainable growth and the development of a sustainable society.

#### 4 Materialities

Effect of business activities on society

Internal activities

##### Comprehensive maintenance system backed by the organizational capabilities

Contribute to the development of social infrastructure by using partner companies interactions and the group's aggregate resources for all maintenance processes, whether large or small.



##### Productivity improvement through technology development

Improve productivity by combining chemical and civil engineering technologies to create new technologies and by conducting training and education programs.



##### Sound governance and measures for more improvements

Make sound and transparent governance to maintain the foundation for relationships with all stakeholders.



##### Contribution to the development of sustainable cities

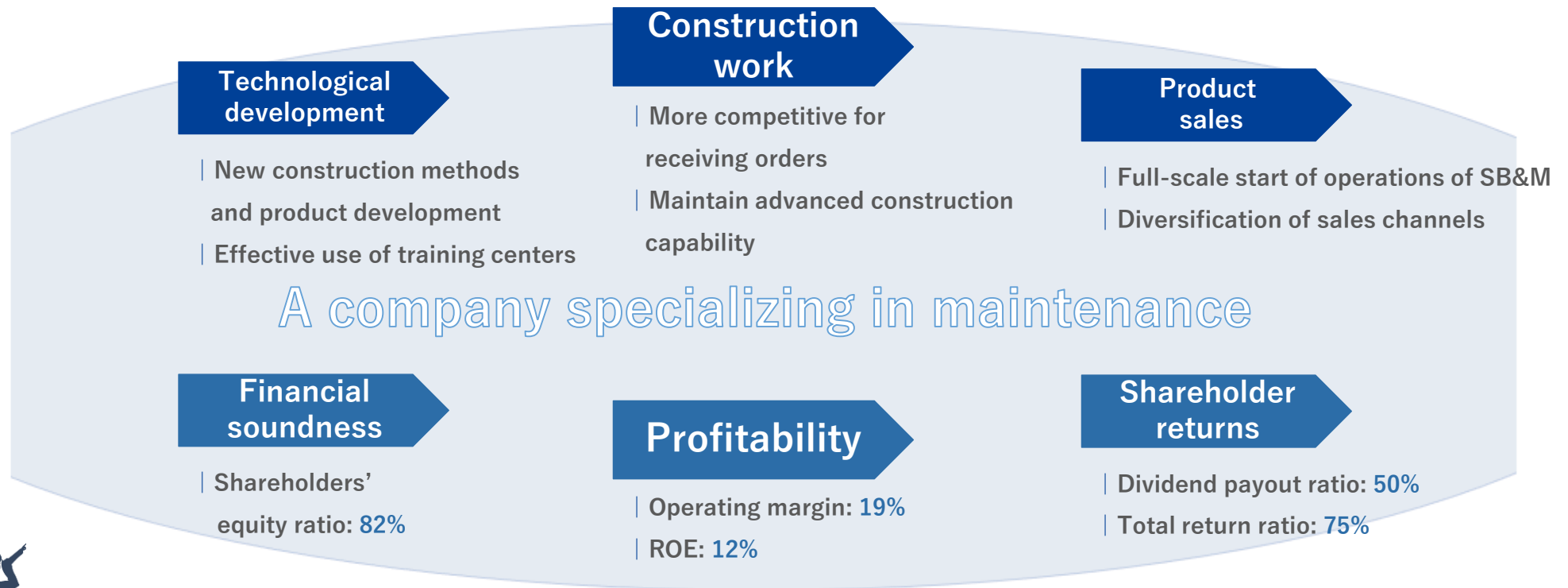
Position the social infrastructure maintenance business as a key component of the development of sustainable cities that are environmentally responsible.





## "Honing our inherent strengths what it is that makes us SHO-BOND"

- 1 Further initiatives for large-scale construction by reinforcing organizational capabilities
- 2 Develop new technologies ahead of other companies and take on the challenge of a new product sales strategy
- 3 Increase orders through human resource development that can respond to market changes and the increase of productivity
- 4 Manage both profitability and financial soundness and enhance shareholder returns
- 5 More ESG activities and contributions to SDGs



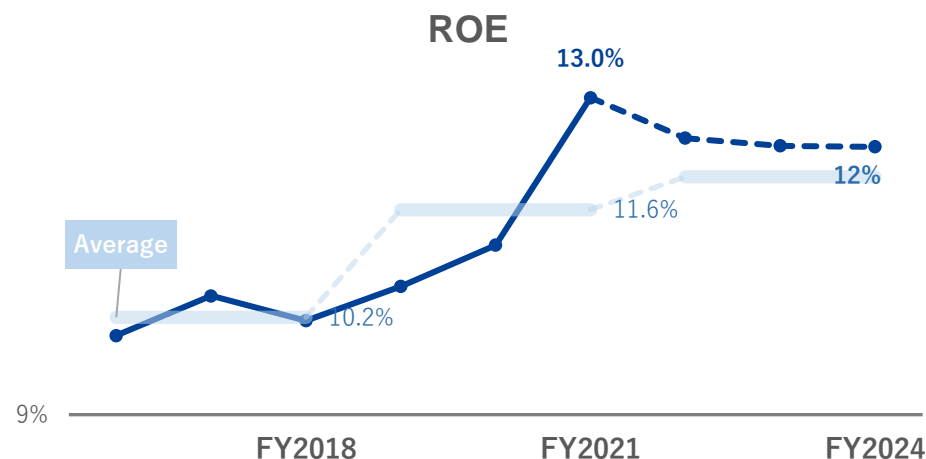
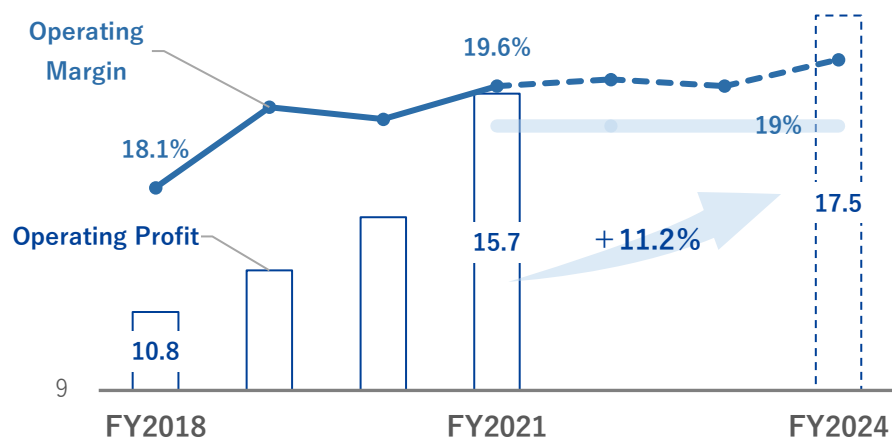


	FY June, 2021	FY June, 2024	
Sales	80.07 ¥bn	<b>87.5 ¥bn</b>	+ 9.3%
Operating Profit	15.73 ¥bn	<b>17.5 ¥bn</b>	+ 11.2%
Profit Attributable to Owners of Parent	11.34 ¥bn	<b>12.0 ¥bn</b>	+ 5.8%
ROE	13.0 %	<b>12.0 %</b>	
Payout Ratio	50.1 %	<b>50.0 %</b>	
Total Return Ratio	50.1 %	<b>75.0 %</b>	

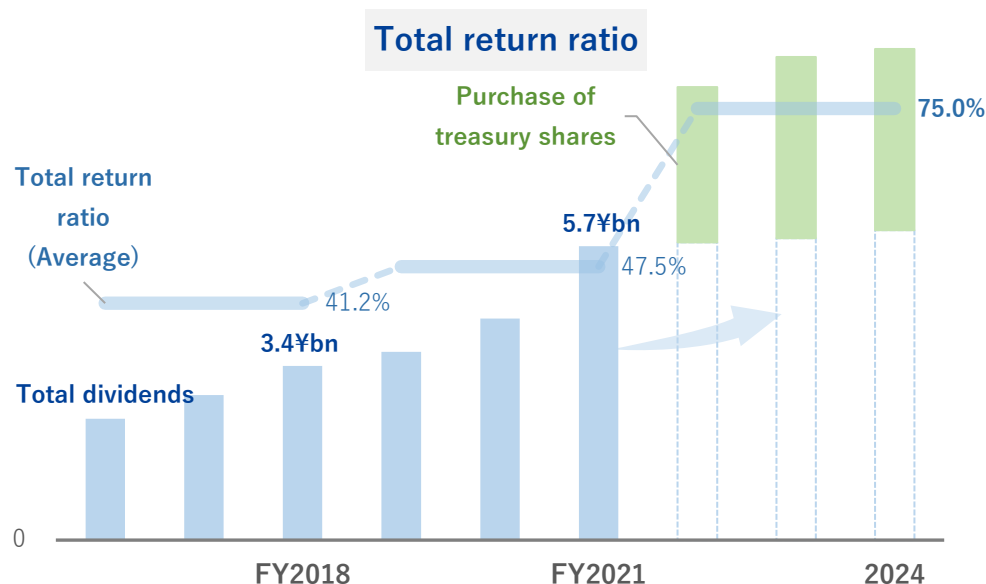
### “Sustainable profit growth and the improvement of corporate value”

SHO-BOND will aim for sustainable growth of 10% or more over three years with the operating profit target of ¥17,500 million in the final year by increasing net sales further and maintaining the operating profit ratio at a high level. By continuing management that prioritizes capital efficiency, return on equity (ROE) will be maintained at 12% or more through the medium-term period.

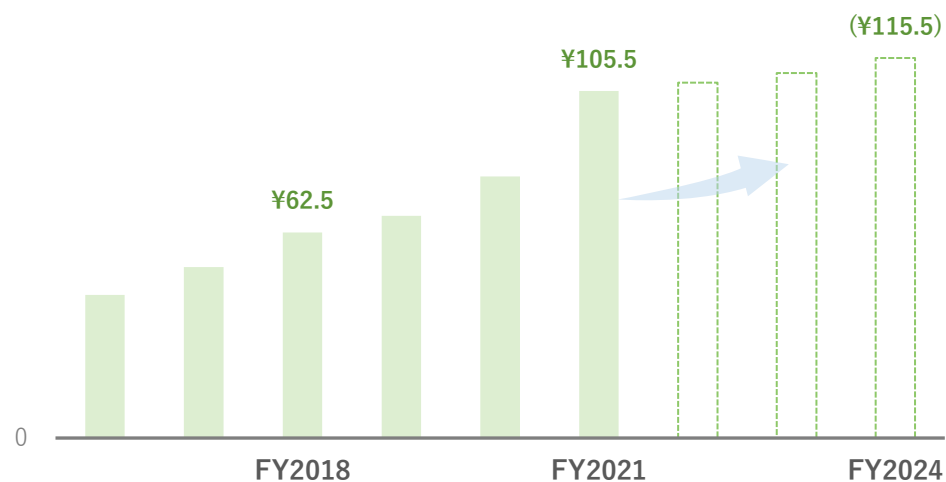
We will strive to improve corporate value by increasing shareholder returns.







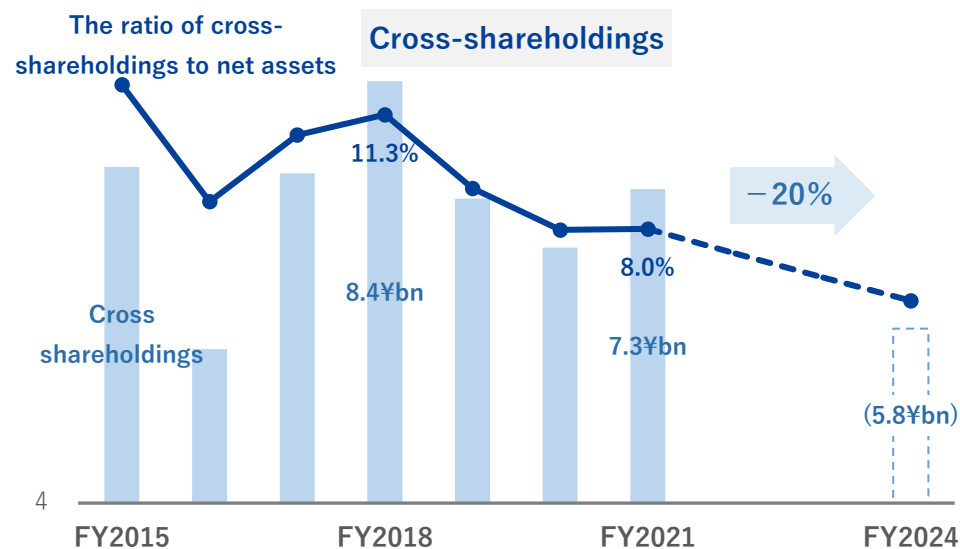
### Dividend per share



### “Purchase of treasury shares of ¥10,000 million over three years”

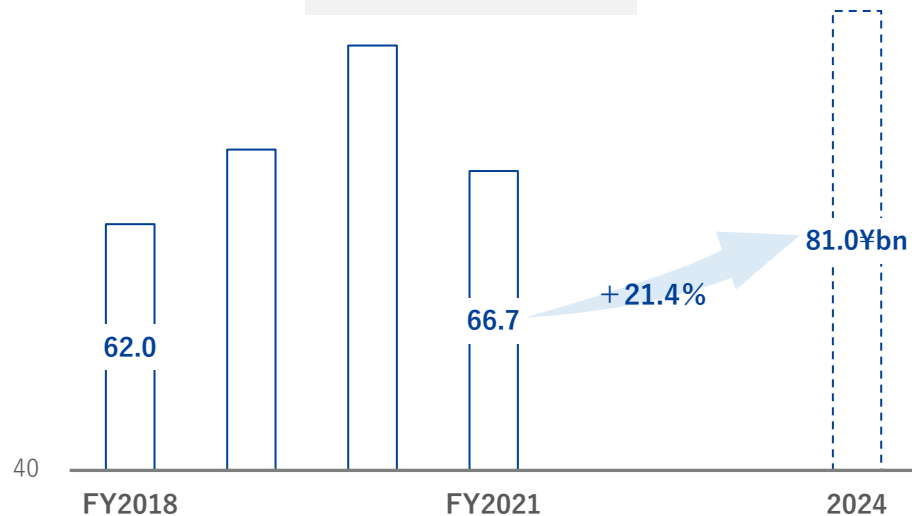
About dividends for the continuous and stable return of profits, SHO-BOND will aim to steadily increase the dividend amount per share by maintaining a dividend payout ratio of 50% or more. Additionally, We will purchase ¥10,000 million of treasury shares over three years, and maintain a total return ratio of 75% or more.

We will reduce the ratio of cross-shareholdings to net assets by selling 20% on a fair value basis.

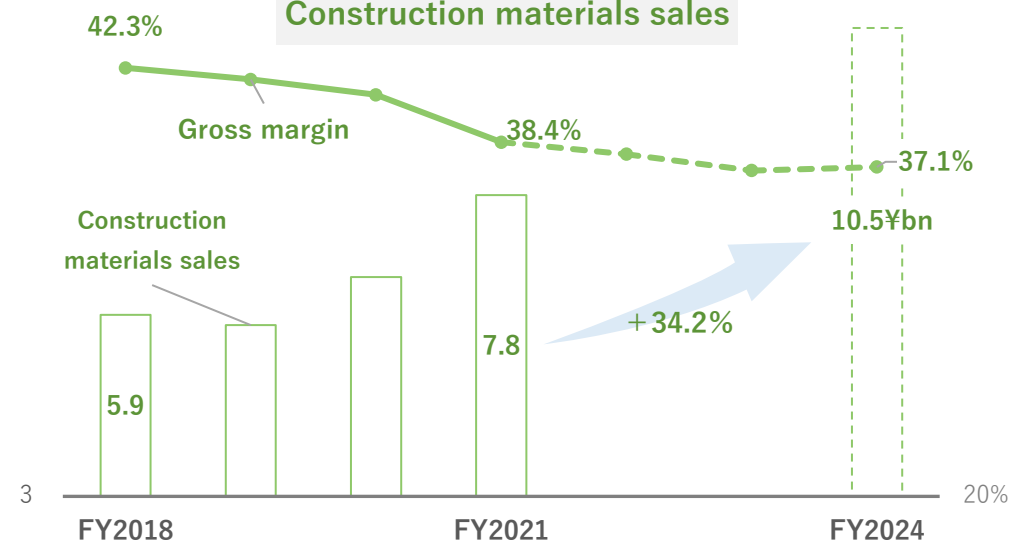




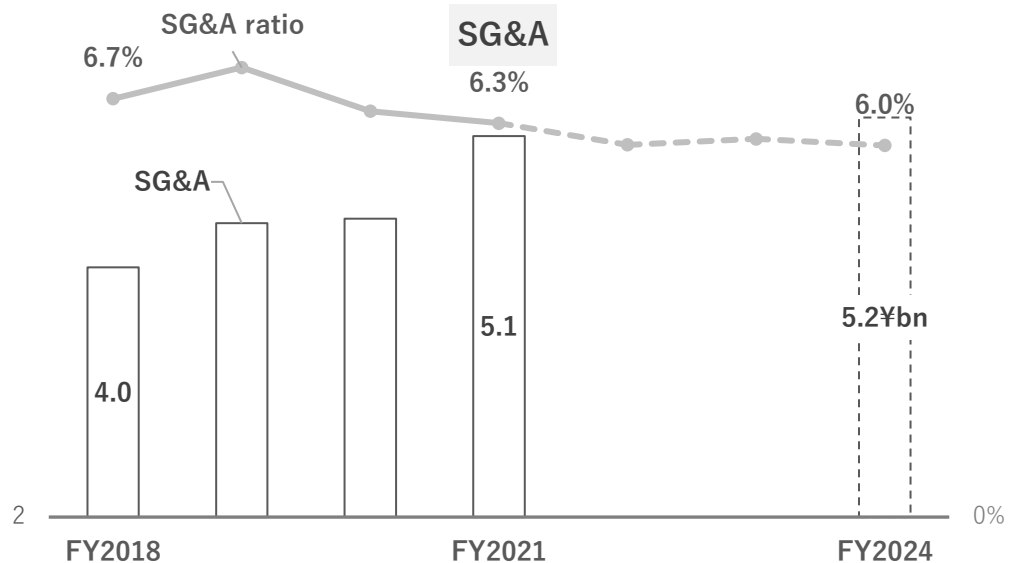
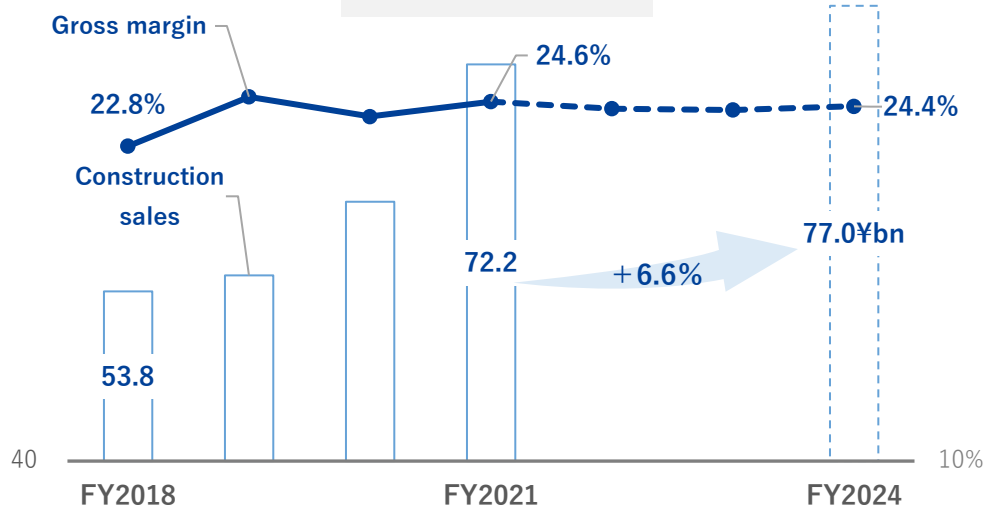
Construction Orders



Construction materials sales



Construction Sales

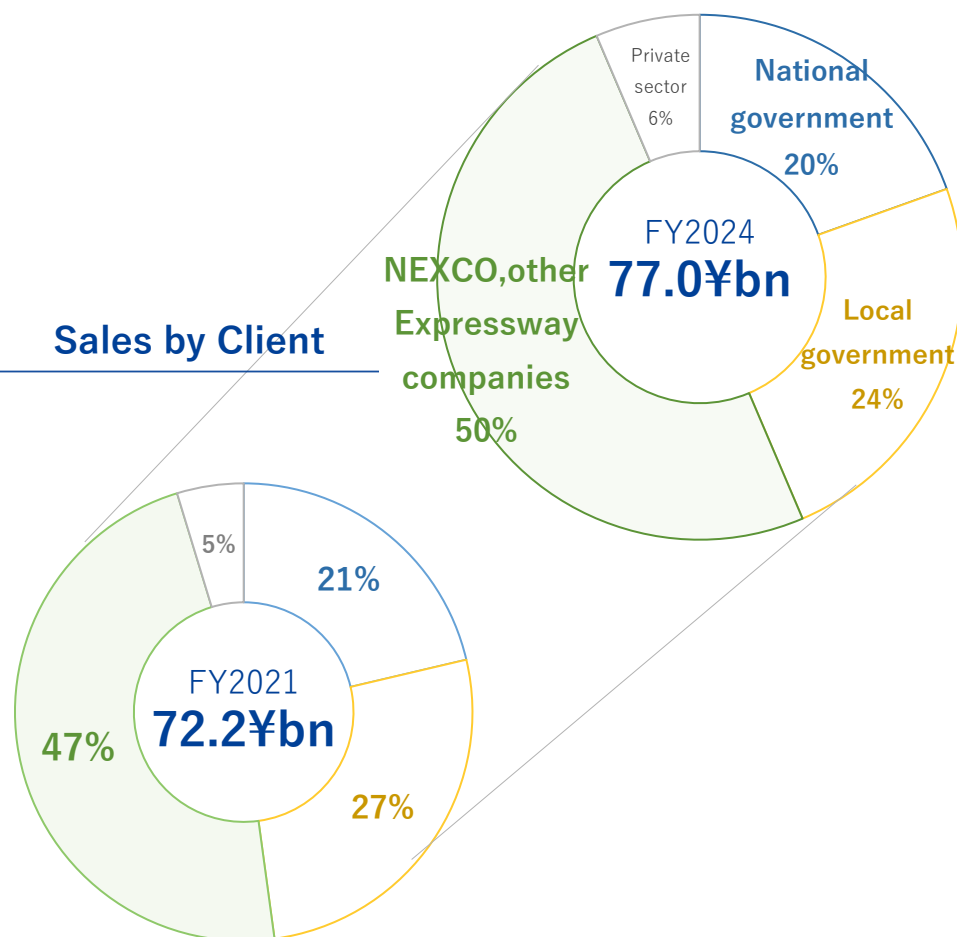




### More activities to receive large orders

Use measures taken by the in-house companies to further strengthen capabilities for receiving large orders and raise expressway company projects to more than half of all construction sales. Continue improving productivity per employee by receiving large orders.

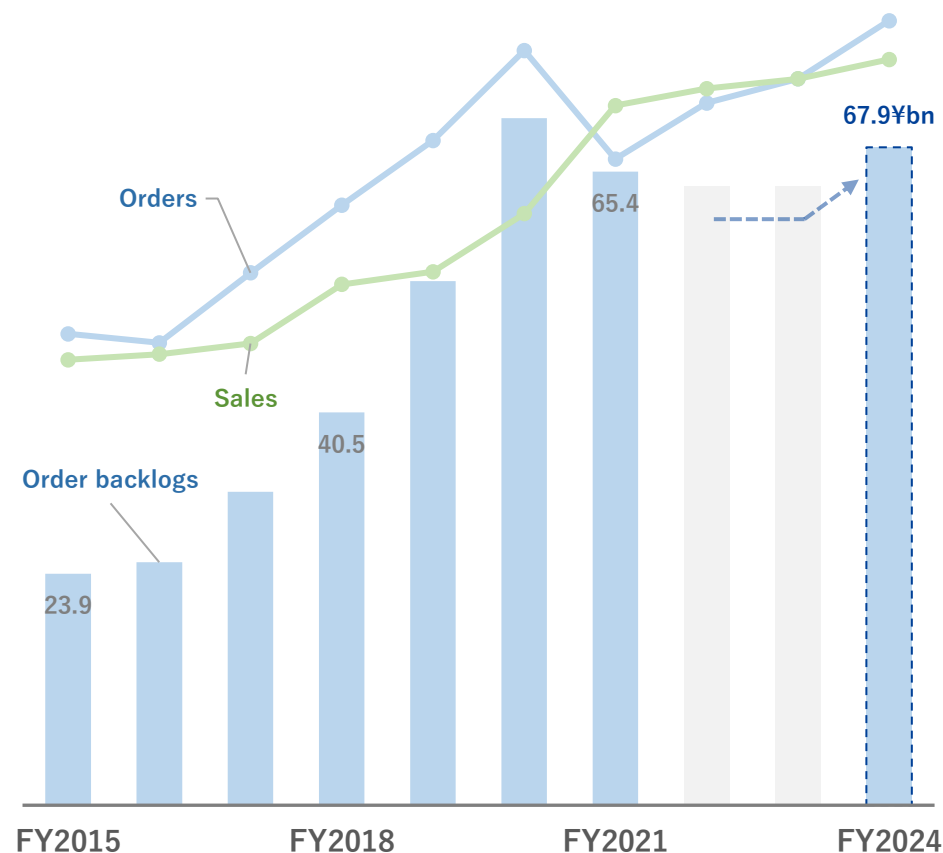
### Sales by Client



### Order backlog

Maintain a substantial order backlog by receiving new orders as needed to continue generating a large volume of construction sales. In the plan's final year, the goal is new orders that are greater than construction sales in order to advance to a stage of even faster growth.

### Construction Sales, Orders and Order backlogs





1

**Upgrade the order receipt strategy utilizing the in-house company structure**

In-house companies will implement the optimal appointment of engineers and partner companies over large areas and a more advanced strategy for purchasing materials. Through these activities, we aim for higher amount of orders, and maintain and improve profit margins by carefully selecting orders.

**Construction**

2

**More activities for large projects and construction work capability**

To raise expressway companies to more than half of construction sales, we will provide employee training programs and strengthen construction skills and capabilities, including those of partner companies, in order to capture large orders.

**Construction**

3

**Challenge a new product sales strategy by SB&M**

Use SB&M, a joint venture with Mitsui & Co., Ltd., to target opportunities in the maintenance markets of Japan and other countries. The goal is sales of products in Japan, other Asian countries, North America and other regions.

**Sales**

4

**More joint activities by increasing cooperation among group companies and other companies**

Strengthen product sales activities in regions with no SHO-BOND Group business sites. At SB&M, promote business activities involving infrastructure market sectors other than highways and at Kyna-Tech, start the water jet business and work on benefiting from synergies with SHO-BOND CORPORATION.

**Construction**

5

**New technologies for preventive infrastructure maintenance**

Preventive infrastructure maintenance is a key element of a five-year acceleration measures for building national resilience. Preventive infrastructure maintenance is a core strength of SHO-BOND and this expertise will be used to develop new technologies ahead of competitors.

**Technologies**



1

**To become more competitive for capturing orders by developing human resources capable of adapting to changing markets**

We will utilize our workforce with balance between recruiting and training activities in order to both reinforce the ability to capture orders and maintain the high quality of construction work. The plan is to increase the workforce to about 1,000 three years from now.



2

**Personnel system reforms that reflect the changing business environment**

We will revise personnel systems to reflect changes in the business environment, such as by enacting working style reforms, increasing job opportunities for seniors and revising our personnel system.



3

**A strong safety culture and rigorous on-site training**

We will use external consultants as well for extensive safety education programs for our own people and the staff of partner companies. The aim is building a powerful framework for construction operations. At the Tsukuba Training Center, we will conduct health and safety classes using hands-on lessons.



4

**Use of the digital transformation (DX) for higher productivity**

We are using IT for improving productivity through activities centered on the newly established DX Promotion Office. Our goals are higher efficiency and labor-saving for design and construction operations and higher levels of health and safety.



5

**Build a framework for responding to ESG issues**

We are committed to progress involving ESG and the Sustainable Development Goals. One step was the establishment of an ESG Promotion Office. This office will support activities throughout the SHO-BOND Group and improve the disclosure of non-financial information.







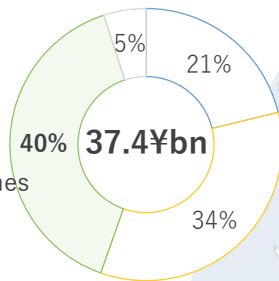
## Construction

Upgrade the order receipt strategy  
utilizing the in-house company structure

More activities for large projects and construction work capability

### East Japan In-house company

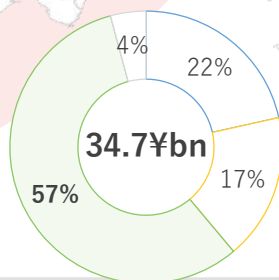
Number of employees  
"390"  
Number of branches  
"9"  
Number of construction  
subsidiaries "6"



○ Regional Office  
● Construction Subsidiary

### West Japan In-house Company

Number of employees  
"373"  
Number of branches  
"12"  
Number of construction  
subsidiaries "5"

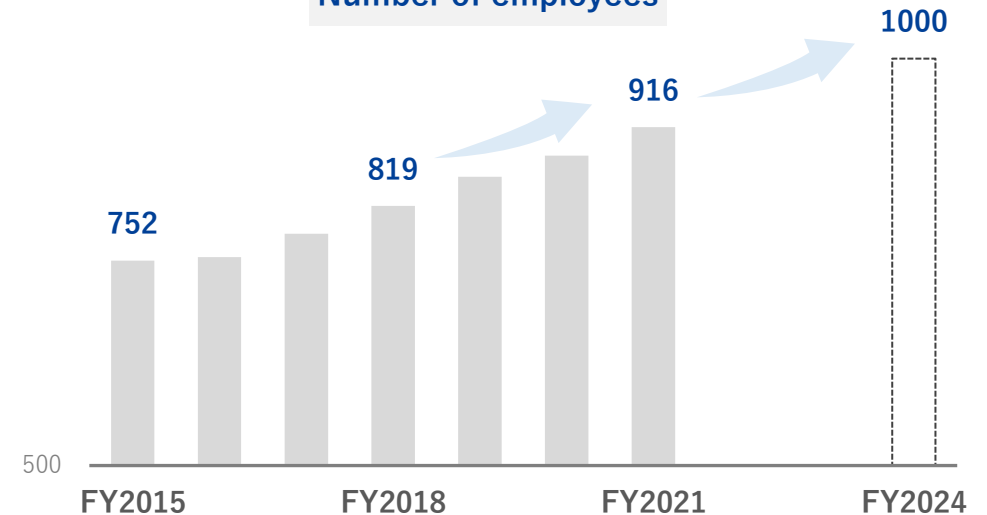


Construction sales for the fiscal  
year ended June 2021

## Major initiatives by in-house companies

- Enhancement of the large project review meeting and safety management
- Steady receipt of public-sector orders for a more consistent level of operations
- Ensure construction capabilities by appointing partner companies in larger areas
- Increase sales of products by using sales activities closely linked to local markets
- The strategic rotation of people among group companies
- Improve job site skills by holding seminars, field trips, hands-on classes and other activities
- Construction information modeling (CIM) training programs for engineers

### Number of employees





## Sales

Challenge a new product sales strategy by SB&M

Approach for solving issues of customers/administrators in Japan and other countries

Japan

Customers/  
Administrators

Demand for needs

Multifaceted (market sectors/customers) approach for sales

**SHO-BOND & MIT**  
Infrastructure Maintenance Corporation

SHO-BOND  
Technologies

Mitsui & Co., Ltd.  
Network in Japan and  
other countries

(Head office support: 10 people)

Investigation  
and  
Diagnosis

Proposals

Sales of  
products

Sales of  
construction  
methods

Technological  
support

Inheriting and  
passing on  
social  
infrastructure to  
the next  
generation in  
good condition

- Export of maintenance technologies
- New markets – Challenges and Innovation

Demand for needs


Global

Customers/  
Administrators



## Sales

## Profile of the Joint Venture in Thailand

 **The Siam Cement Group Public Company Ltd.**  
(Siam Cement Group)

A conglomerate centered on cement, building materials, chemicals, and paper and pulp

**The Concrete Products and Aggregate Co., Ltd**

Sale and placement of ready-mixed concrete

51%

## CPAC SB&amp;M Lifetime Solution Co., Ltd.



**Main targets**  
| Expressways  
| Harbor facilities  
| Building construction  
| The SCG Group Network  
(Plants and other business sites)

49%



**SHO-BOND & MIT**  
Infrastructure Maintenance Corporation

President  
(CPAC)



CPAC	7
SHO-BOND Mitsui & Co., Ltd.	3
<b>Total</b>	<b>10</b>

(8 supporters in Japan)

Materials and construction

(4)

GM SB&M(SB)

Use of SHO-BOND know-how for selection of materials and construction management

Sales and consulting

(2)

GM CPAC

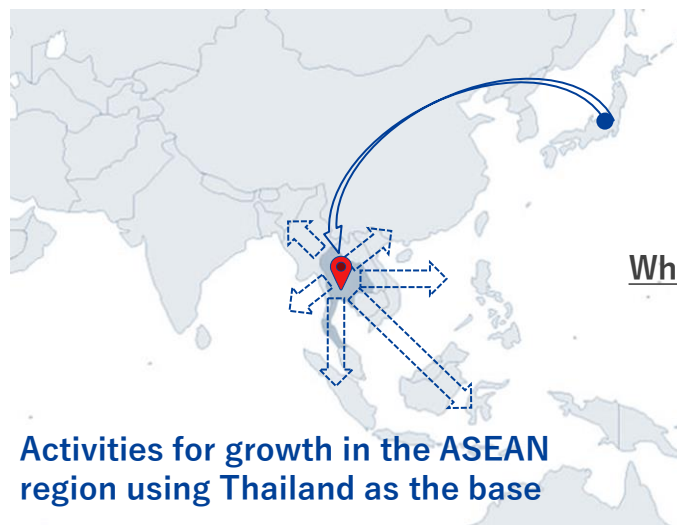
Sales capabilities of CPAC and product sales support of SHO-BOND

Strategies and supervision

(3)

GM SB&M(Mitsui)

Oversight of sales, construction, accounting and other operations of the JV



Activities for growth in the ASEAN region using Thailand as the base

## Why Thailand and Southeast Asia?

- | Relatively close to Japan
- | Many subsidiaries and business sites of Japanese companies; opportunity to contribute to public/private-sector economic progress in this region
- | Academic sector interaction between SE Asia and Japan



## Build a framework for responding to ESG issues

### Establishment of the ESG Promotion Office

The SHO-BOND Group has designated four materialities from among a broad range of social issues in order to contribute to accomplishing the SDGs and achieving the group's corporate philosophy. We have established a Sustainability Policy to provide a guideline for constant activities in accordance with these four materiality priorities, the medium- to long-term growth of corporate value and contributions to creating a sustainable society. (see the Appendix on page 26)

The ESG Promotion Office sets up action plans and KPIs (key performance indicators) for the main items of the Sustainability Policy, and works with related departments within the Group to address the issues. We plan to disclose information on the progress and results of these efforts on the Group's website and in the form of an integrated report.





Use the digital transformation to increase productivity

### DX Promotion Office

Forms a team for each theme for a digital transformation

Marketing and Sales

Engineering

Corporate Administration

Safety Management

In-house Companies

Teams including the head office, in-house companies and other departments involved are formed for the implementation of DX projects.

Themes	Actions
Improve construction productivity	<p><b>Use a construction management system</b> Greater efficiency for construction management documents and management of photos</p> <p><b>Utilization of the cloud service for construction data</b> Utilization of accumulated data, sharing of information</p>
Higher productivity for design tasks	<p><b>BIM/CIM by using 3D CAM</b> 3D design images and use of associated data</p> <p><b>Establish system for centralization of design data</b> Share and use design data throughout the company</p> <p><b>Develop AI diagnosis technologies</b> Create a system that uses images to diagnose damage and produce recommendations for repairs</p>
Improve health and safety management	<p><b>Use wearable cameras to confirm safety during dangerous tasks</b> Confirm safety from a remote location</p> <p><b>Improve safety activities by using a safety management support app</b></p>

Use data acquired from experience as an infrastructure maintenance specialist to boost productivity by raising the efficiency of design and construction work and labor-saving and to improve workplace health and safety.

Themes	Actions
Higher productivity of business processes	<p><b>Use links between the main IT system and applications for increasing efficiency and eliminating the use of paper documents</b></p> <ul style="list-style-type: none"> <li>• Start using a work flow system for decisions and approvals</li> <li>• Increase the use of cashless payment methods</li> <li>• Start using an e-invoice system</li> </ul>
More convenience by centralizing internal data	<p><b>More convenience by using an internal data platform</b></p> <ul style="list-style-type: none"> <li>• Update and redesign the internal portal site</li> </ul>
More efficient education programs for employees	<p><b>Establish a framework for providing web classes and other online training</b></p> <ul style="list-style-type: none"> <li>• Use of internally produced e-learning lessons</li> <li>• Use of internally produced videos</li> </ul>

Establish platforms for administrative operations and internal data and link IT systems of all types to increase productivity by improving efficiency and labor-saving.





## Technologies

## Construction

### Establishment of the Tsukuba Training Center

- The new Tsukuba Training Center, which is adjacent to the Technical Research Institute, provides support for experiential learning to give employees of SHO-BOND and its partner companies skills involving maintenance and reinforcement technologies as well as health and safety.
- Lessons about construction and related technologies include hands-on classes for setting up scaffolding and assembling steel components, and classes for creating structural designs, and other construction skills.
- Health and safety lessons include knowledge about safety and classes that utilize new technologies, such as the use of virtual reality for visualizing dangerous tasks.

To be completed in  
October 2021



Progress as of  
June 2021



A lesson using virtual reality

## Technologies

### The New Inorganic Research Building

- Increase activities throughout SHO-BOND concerning inorganic materials by focusing three themes, cross-sectional restoration, deck slab reinforcement and preventive maintenance.
- We will accelerate research and development activities for simple and inexpensive construction method for small/midsize bridges for local governments and expansion of the product lineup.
- We will aim to develop repair materials that are not restricted by Japanese standards to be competitive in the global market.

## Inorganic materials

### Life extension of highway deck slab



High-permeability  
primer



Placement of  
CPJ-L concrete



The new bridge deck

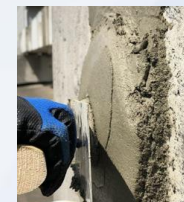
This method results in a bridge with a long life due to the application of two types of adhesives and the use of concrete with a low-elasticity latex and ability to harden very quickly for the bridge deck surface.

## Inorganic materials

### A cross-sectional repair material that is easy to use



Application of the  
material



Finishing  
trowel



Thickness

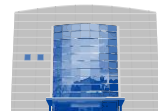
The polymer cross-sectional repair material is easy to smooth out with a finishing trowel. A thickness of up to about 4cm is possible. Only add water because the material is premixed.



## SHO-BOND HOLDINGS CO., LTD.

### SHO-BOND CORPORATION

Technical Research  
Institute



**SHO-BOND  
MATERIAL CO., LTD.**



**KAKO-Group**  
(Construction Subsidiary)



**SHO-BOND & MIT**  
Infrastructure Maintenance Corporation

Local  
constructors

Business  
partner

Business  
partner

**Expressway  
companies**

Expressway large-  
scale renewal and  
repair projects

Large scale  
project

**National  
government**

Life-extending works  
Seismic reinforcement  
works

**Local  
governments**

Life-extending works  
Seismic reinforcement  
works

Medium and small  
scale project

**National  
and Local  
governments**

Various maintenance  
works

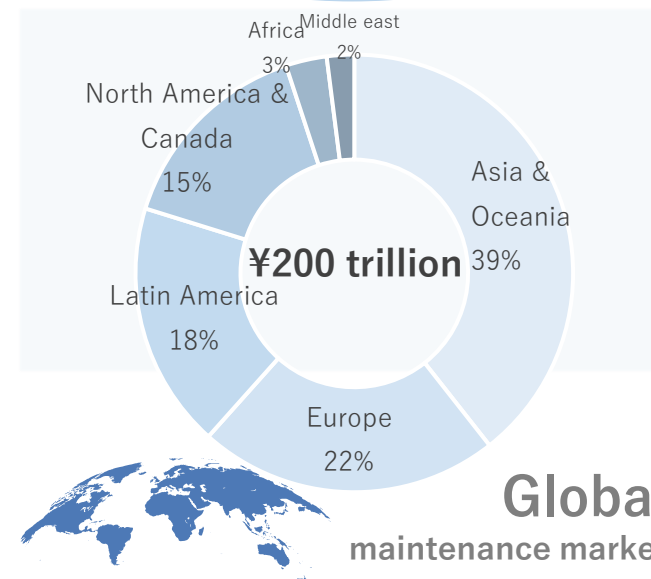
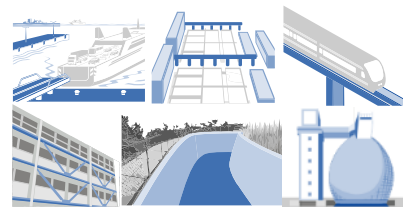
PPP/PFI  
Other private

Other  
Infrastructure

Road structures such as bridges  
and tunnels



**Domestic  
maintenance market**



**Global  
maintenance market**

Estimated annual sales in maintenance market: approx.

# Appendix



Based on the SHO-BOND Group's mission of "inheriting and passing on social infrastructure to the next generation in good condition," our corporate philosophy is to contribute to the realization of a safe and affluent society by utilizing our advanced technological development capability as a leading company in the structure maintenance business. Accomplishing this goal will require a strong commitment to sustainability activities backed by the cooperation and support of all our stakeholders.

We have designated four materialities from among a broad range of social issues in order to contribute to accomplishing the SDGs and achieving the group's corporate philosophy. We have established a Sustainability Policy to provide a guideline for constant activities in accordance with these four materiality priorities, the medium- to long-term growth of corporate value and contributions to creating a sustainable society. Under the oversight of the ESG Promotion Office, we will continue to use this policy as the basis for a broad range of sustainability initiatives.

## Sustainability Policy

### Comprehensive maintenance system backed by the organizational capabilities

#### S Comprehensive maintenance capabilities (investigation, designs, construction) for public safety and confidence

- We work closely with customers on every stage of maintenance projects, including investigation, designs and construction, and draw on the strengths of all group companies to provide services of the highest quality for ensuring infrastructure safety.
- We use our expertise as an infrastructure maintenance specialist for infrastructure repair and reinforcement projects for resistance to natural disasters and other threats.

#### S Workplace health and safety

- Our highest priorities are the protection of life and the safety of construction activities. Based on this philosophy, our goal is no workplace accidents at construction and manufacturing sites. We have rigorous health and safety measures that include activities for reducing vulnerability to risk factors.
- There are many programs for the physical and mental well-being of employees, including measures to eliminate long working hours and provision of mental health care.



## Productivity improvement through technology development

### S Develop and use technologies for social issues

- We use advanced technologies combining technologies in the fields of chemistry and civil engineering for the development of environmentally and socially responsible materials and construction methods.

### S Recruiting and training programs

- We do everything possible to hire many types of people and make hiring decisions with fairness and no discrimination of any kind.
- We maintain a training and education infrastructure for giving people the knowledge to play key roles in the sustainable growth of the SHO-BOND Group. We are dedicated to giving everyone the opportunity to reach his or her full potential.
- We will use a fair personnel system for evaluating performance to retain talented people and ensure that knowledge is passed on. We will put focuses especially on giving younger employees opportunities to advance and providing many job opportunities for seniors.

### S Activities to increase productivity

- Strengthening technological skills and improving operating efficiency results in more added value and working style reform activities contribute to higher productivity.
- We use many types of equipment for raising productivity in order to raise the efficiency of all tasks required for investigation, design, construction and other types of work.

### S Employee retention and sound labor relations

- We comply with all labor laws and regulations and have established numerous programs and frameworks for maintaining pleasant and productive workplaces at group companies and our partner companies.
- We maintain sound labor relations by encouraging dialogues between labor and management, providing access to consultations and using other measures.

## Sound governance and measures for more improvements

### G Strengthen corporate governance

- To meet the expectations of stakeholders for sustainable growth, our corporate governance is structured for transparency, fairness, and the ability to make management decisions with speed and confidence.

### G Strengthen risk management

- Numerous measures are taken for the proper management of risk, including a system of internal controls, a culture of recognizing and prudently taking on risk, and a risk identification, evaluation and monitoring system that incorporates ESG considerations.

### G Strict compliance with laws and regulations/fair and ethical business practices

- There are extensive education and training programs about compliance for employees as well as monitoring and other activities in order to maintain a framework for fair business practices.

### G Information security measures

- IT systems and other measures are used for information security and there are strict measures for the protection of personal and other confidential information. In addition, education and training programs are provided to employees in order to reinforce their commitment to information security.

### G Proper management of intellectual property

- We properly manage and protect our intellectual property rights and perform surveys and other procedures to prevent the infringement of the rights of others.





## Contribution to the development of sustainable cities

### E Sustainable use of resources

- We contribute to the sustainability of public-sector resources by using advanced maintenance technologies for life extension of infrastructure.
- We are dedicated to playing a role in creating a society where resources are recycled. We use renewable resources and parts across the entire supply chain as much as possible and utilize resources in a manner that supports sustainability.

### E Proper management of waste materials

- We use proper and responsible activities for the management and disposal of waste materials created by our business operations.

### E Measures to combat climate change

- We are contributing to the fight against climate change by constantly working on the reduction of greenhouse gases generated by our business operations.
- We understand that life extension of infrastructure helps lower greenhouse gas emissions. Skills as an infrastructure maintenance specialist are used for the utilization of business operations to play a part in combating climate change.
- We are committed to using infrastructure reinforcement for natural disaster resilience and other business activities in order to play a role in the fight against climate change on the entire society.

### E Assessment of environmental impact of projects

- We will comply with the environmental requirements of every project and take other actions for minimizing the effects of our activities on the environment and society.

### S Development of sustainable cities as Japan's population ages and declines

- We will use our maintenance expertise to supply practical and effective solutions for problems involving aging infrastructure and other public facilities as Japan's population declines.

### S Health and safety of customers and consumers

- We will maintain the management systems required to ensure the health and safety of the people who use the infrastructure we help maintain and of customers who purchased building materials from us. We will respond properly if a problem occurs.

### S Community relationships

- We understand that the infrastructure can have a significant effect on communities and regions and will maintain strong lines of communication in order to earn the trust of the public.

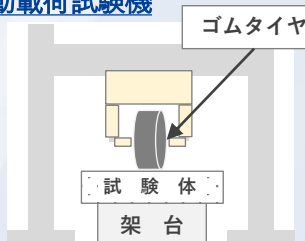


■化学研究棟内部



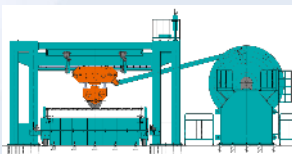
■構造物大型実験棟内部

## ■ゴムタイヤ式輪荷重移動載荷試験機



トラックタイヤを模した輪荷重を橋梁床版上に移動させ、橋梁床版の疲労耐久性や補強効果の確認をする施設です。試験時間はかかりますが、実構造物と同様の損傷が再現できます。

## ■鉄輪式輪荷重移動載荷試験機



ゴムタイヤの代わりに鉄輪を使用する試験機です。輪荷重が大きく、走行速度が早いいため、試験時間の大幅な短縮が可能です。

## ■環境制御型疲労試験機



任意に設定した温度および湿度の部屋で、補強部材の疲労試験を行います。この疲労試験により、種々の環境下における補修・補強効果がわかります。

## ■複合サイクル試験機



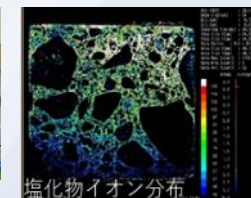
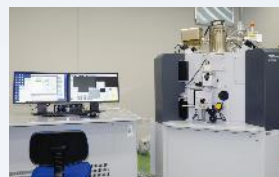
複合サイクル試験機は、塩水噴霧・乾燥・湿潤・塩水浸漬・低温の環境条件を組み合わせることで実環境を再現し、めっきや特殊塗料の耐久性を評価します。

## ■表面・界面切削分析装置



鋭利な切刃を用いて高分子等の試験体表面より超低速で切削および剥離を行い、塗膜等の強さを測定する装置です。切刃の精密な制御によりマイクロメートル単位での測定が可能です。

## ■電子線マイクロアナライザー



コンクリートの断面に電子線を照射することで劣化因子（塩分、硫酸、炭酸ガス等）の分布状況を見ることが出来ます。海岸部の栈橋や橋梁の劣化診断、補修効果の検証に使われます。

## ■全天候試験室

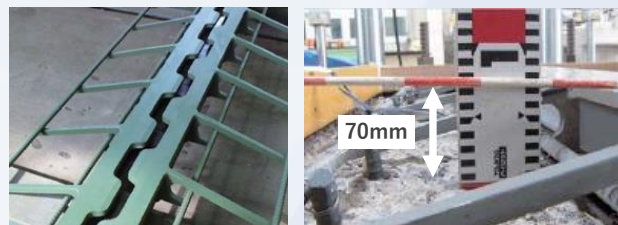


各種気象条件を人工的に再現できます。-20℃から+60℃までの温度と湿度条件、また、日射、降雨、降雪などの条件下における、補修材料の耐久性や作業性を調べます。



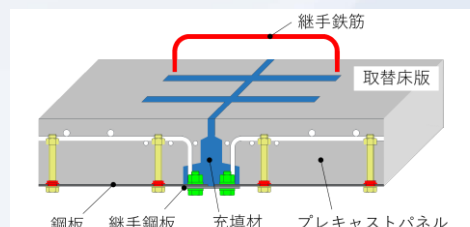


## 構造系 『大型舗装内伸縮装置』



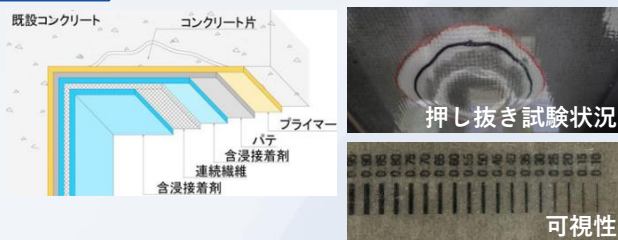
既設コンクリート床版を傷つけず、アスファルト舗装内に設置できる伸縮量50mmまで対応可能な鋼製伸縮装置です。

## 構造系 『床版取替工法』



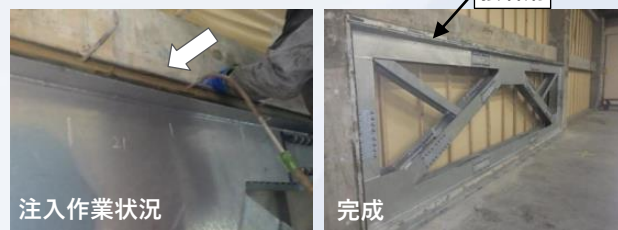
合成床版のずれ止めを、特殊高力ボルトから汎用性の高い普通ボルトに変更し、継手部の現場作業を簡素化しコスト低減を図った夜間施工・昼間解放用の取替床版です。

## 有機系 『透明な高性能剥落対策工法』



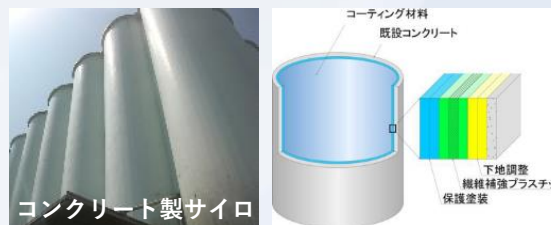
高い透明性を有する高性能コンクリート剥落対策工法です。透明なため、維持管理性に優れ、-30℃～50℃の温度域で使用することが可能です。

## 有機系 『極低温用接着剤』



-25℃でも施工可能な接着剤です。冷凍倉庫のような氷点下環境でも注入作業が可能で、速やかに硬化します。施設を運営しながら耐震補強の施工が可能です。

## 有機系 『サイロ補修工法』



サイロ内面の補修に特化した補修工法です。コーティング材料は貯蔵する粉体の摩擦に耐え、圧力差によるサイロの膨張収縮に抵抗し、ひび割れを発生させません。

## 無機系 『道路橋床版の長寿命化』



2種類の接着剤塗布と、低弾性ラテックス改質超速硬コンクリートの橋面舗装により、橋梁の長寿命化を実現します。

## 無機系 『簡単に打設出来る超速硬コンクリート』



特殊な施工機械を使わず、簡単に超速硬コンクリートを打設できるシステムです。工事による交通規制時間を短縮できます。

## 無機系 『施工性に優れる断面修復材』



コテによる施工が楽々行えるポリマーセメント系断面修復材です。壁面で4cmも厚付けが可能です。プレミックスタイプのため、水を加えるだけで製造可能です。

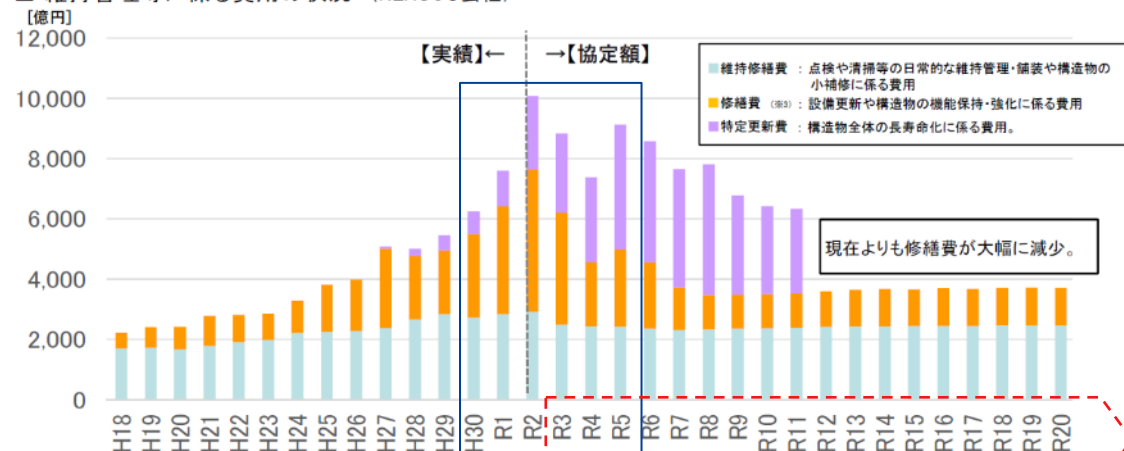


2021年1月 社会資本整備審議会 道路分科会  
第47回 国土幹線道路部会 資料

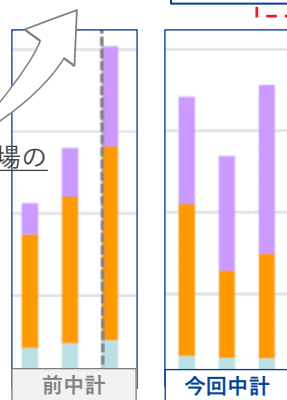
## 4. 今後の維持管理の課題 < 維持管理等に係る費用の状況 >

- 近年、物価高騰の影響や耐震補強事業の実施、省令点検に対応した補修の強化等により、維持管理等に係る費用が増加。
- 特定更新等工事完了後（R12年度以降）の維持管理等に係る費用は、現在よりも減少する計画。
- 予防保全に向けた取組みの推進や災害への対応の強化、設備投資・設備更新費用の増大など、これまで説明してきた内容を実施する事業費の確保が必要。

■ 維持管理等に係る費用の状況（NEXCO3会社）



インフラメンテナンス市場の  
規模が大きく拡大

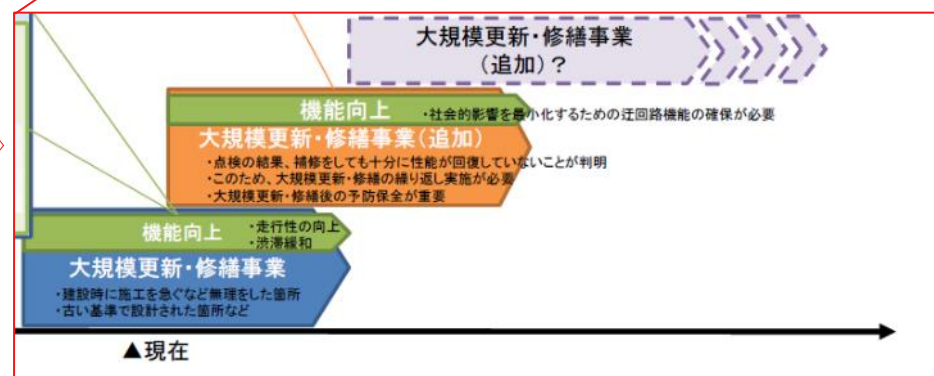


大規模更新・修繕事業の  
追加が進行中

2021年7月 社会資本整備審議会 道路分科会  
第51回 国土幹線道路部会 資料

## 更新事業の現状について

- H26年以降、高速道路の大規模更新・修繕事業に着手しているが、5年に1度の省令点検の結果等を踏まえ、事業の追加の必要性が明らかになっている。
- 走行性の向上や渋滞緩和等の観点から、更新事業に合わせた機能向上も実施する必要がある。

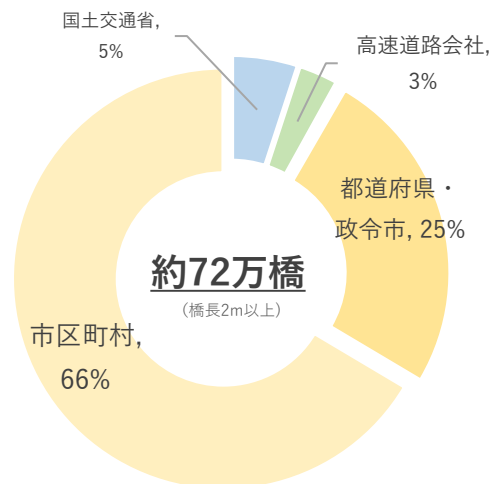




## 橋梁



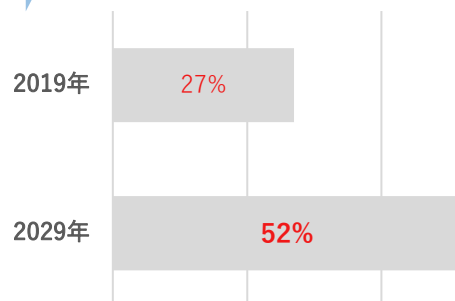
### 管理者別



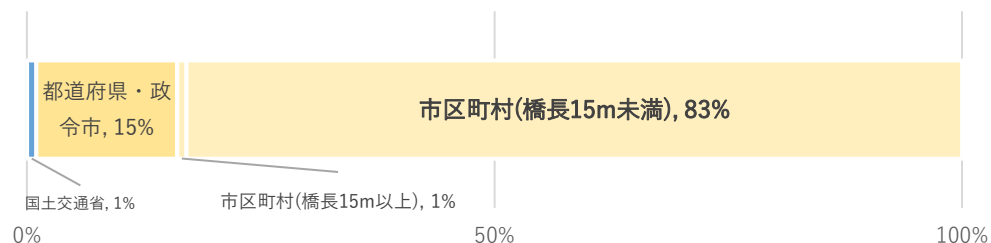
建設後50年を経過した橋梁の割合は、2019年は約27%であるのに対し、10年後には約52%に急増。

この他に建設年度が不明の道路橋が全国で約23万橋あり、これらのお大半が市区町村管理の橋長15m未満の橋梁。

### 建設後50年経過する橋梁数



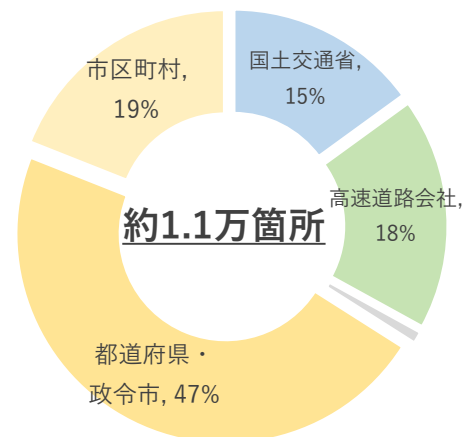
### 建設年度不明橋梁 (約23万橋) 内訳



## トンネル



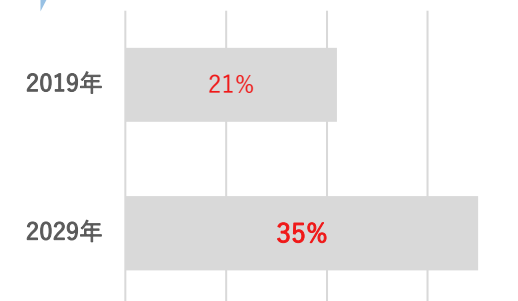
### 管理者別



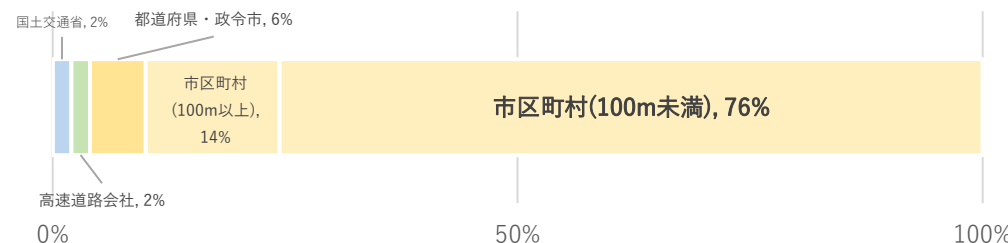
建設後50年を経過したトンネルの割合は、2019年は約21%であるのに対し、10年後には約35%に増加。

建設後50年を経過した延長100m未満のトンネルの割合は、10年後に約71%に増加。

### 建設後50年経過するトンネル数



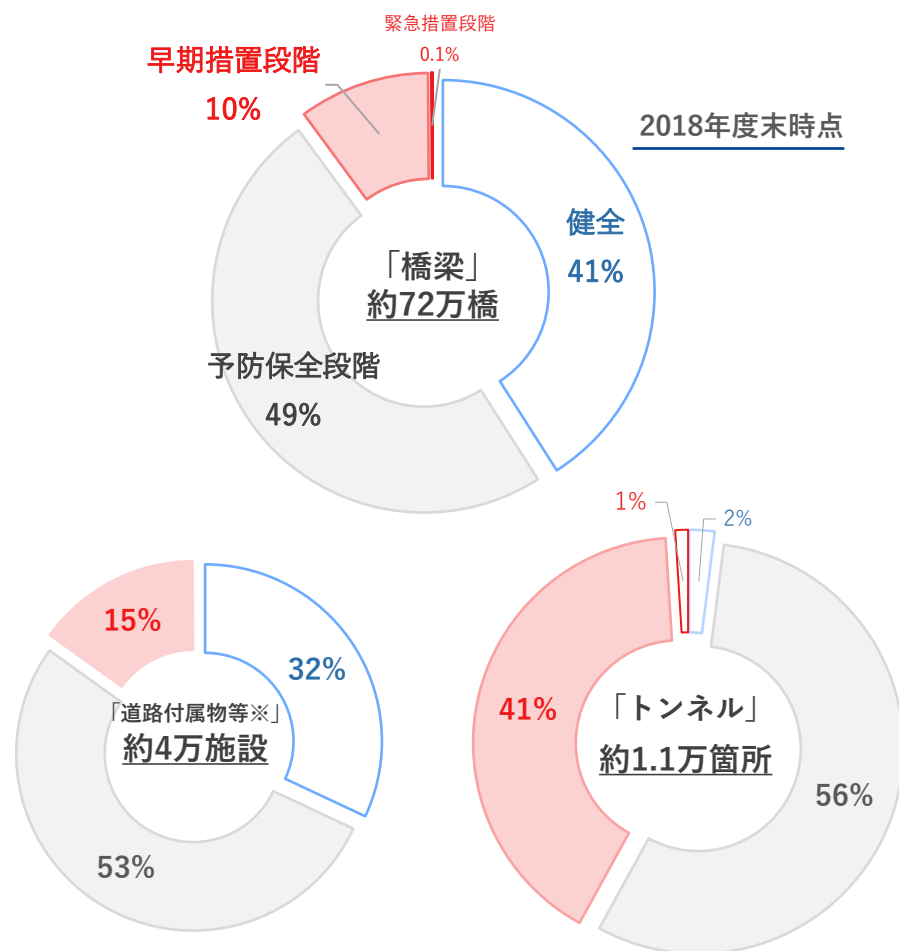
### 建設年度不明トンネル (約400箇所) 内訳



(出所：国土交通省 道路メンテナンス年報 令和元年8月)



## インフラの健全性－判定区分別



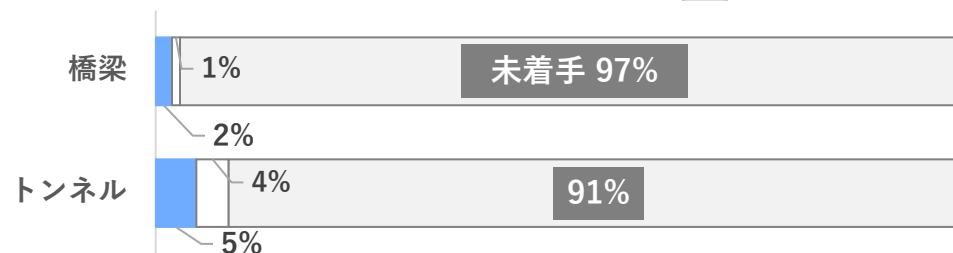
※道路付属物等：  
シェッド・大型カルバート、横断歩道橋、門型標識等

全ての道路管理者は、2013年の道路法改正等を受け、2014年度より5年に1回の頻度で近接目視による点検を実施。2018年度に1巡目が終了。

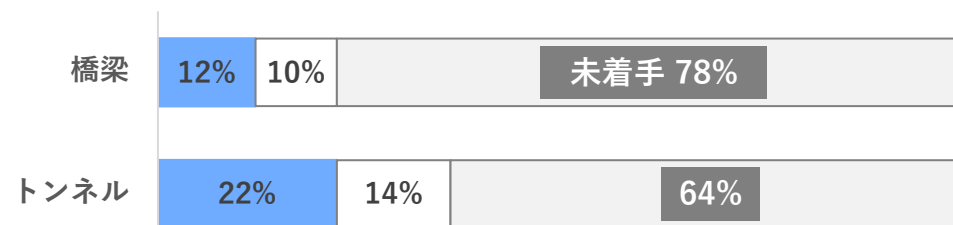
I 健全	構造物の機能に支障が生じていない状態。
II 予防保全段階	構造物の機能に支障が生じていないが、予防保全の観点から措置を講ずることが望ましい状態。
III 早期措置段階	構造物の機能に支障が生じる可能性があり、早期に措置を講ずべき状態。
IV 緊急措置段階	構造物の機能に支障が生じている、又は生じる可能性が著しく高く、緊急に措置を講ずべき状態。

## 予防保全対象 修繕進捗

■ 修繕完了 □ 着手済



## 事後保全対象 修繕進捗



（出所：国土交通省 道路メンテナンス年報 令和元年8月）





## Repair

### ■ Emergency repair of pavement and road surface



### ■ Concrete crack repair



### ■ Cross-Sectional restoration materials and Adhesives



## Prevention

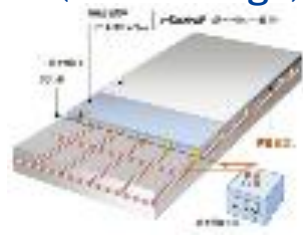
### ■ Prevention of concrete deterioration



### ■ Spalling prevention



### ■ Cathodic protection (salt damage)

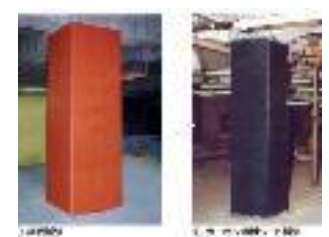


## Reinforcement

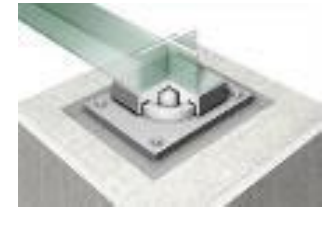
### ■ Deck slab replacement



### ■ Reinforcement method



### ■ Seismic retrofitting





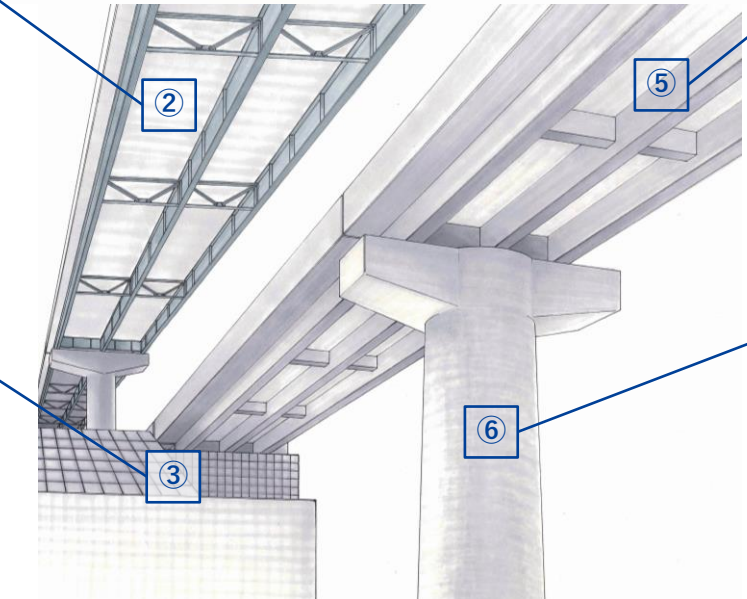
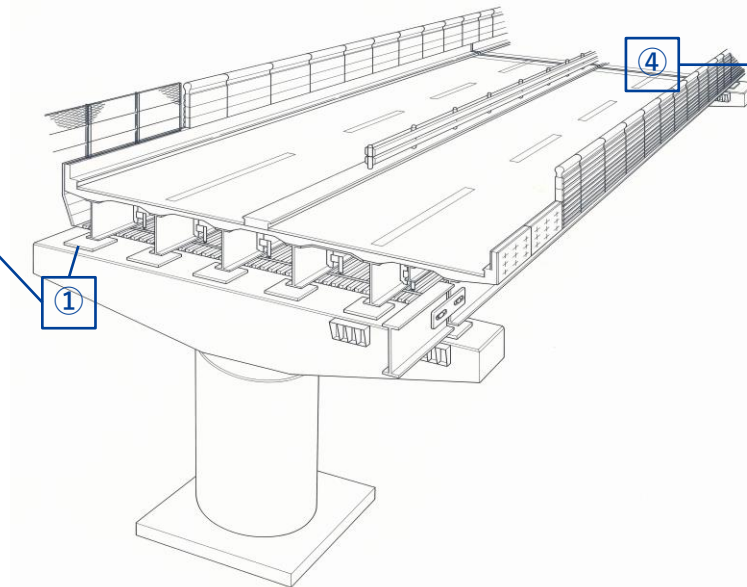
Repair or replacement of Bridge bearing①



Sound absorbing plate②



Prevention device for bridge fall③



④ Expansion joints



⑤ HYBRID sheet for preventing the peeling off



⑥ Winding RC for reinforcement



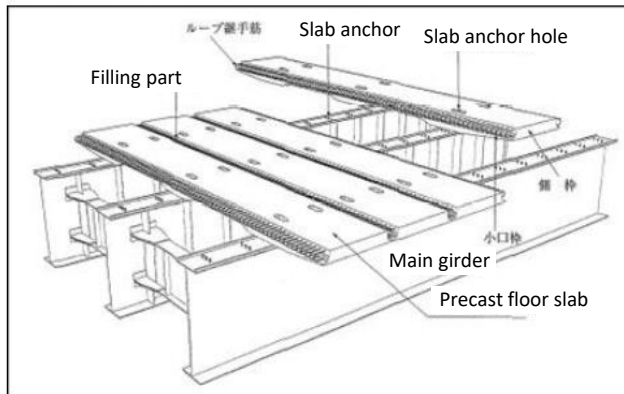




## Highlights of a major renewal project

### Replacement of reinforced concrete deck slabs with prestressed slabs with switch to two-way traffic

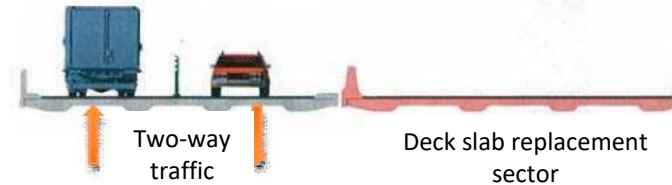
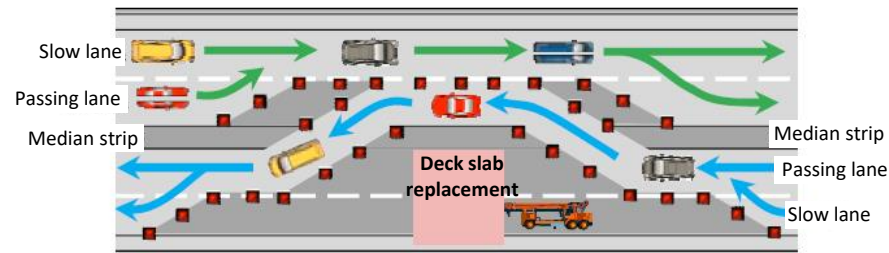
Structure of bridge using precast concrete deck slabs



A crane moves deck slabs into place



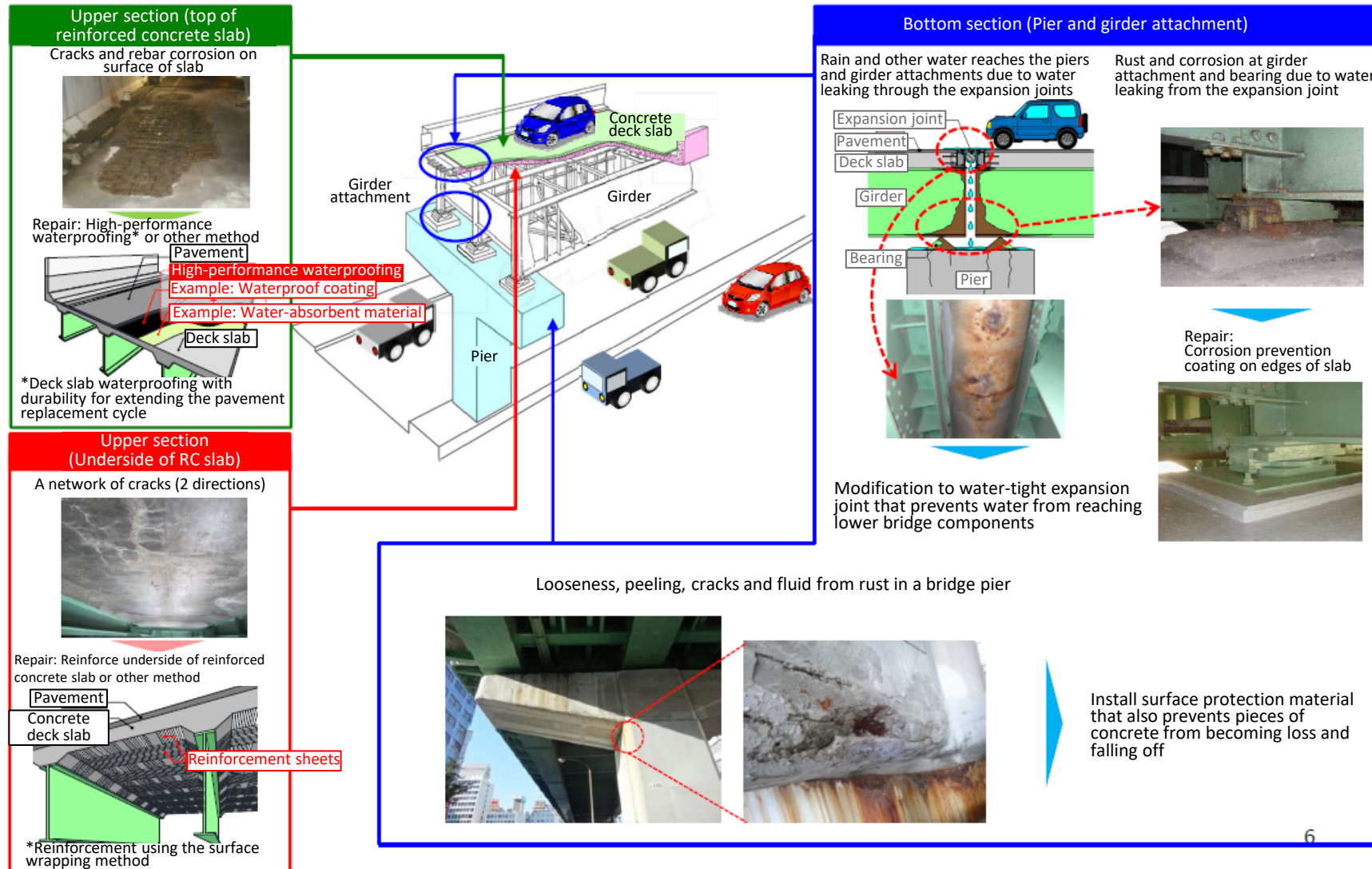
Temporary shift to single-lane two-way traffic



Source: the three NEXCOs websites



## Highlights of a major repair project



6

Source: Nagoya Expressway Public Corporation



#### Disclaimer

This document is an English translation of the announcement titled “Medium-term Business Plan (FY June, 2022 - FY June, 2024)” released in Japanese on August 10, 2021. The Company provides this translation for your reference and convenience only without any warranty as to its accuracy. In case of any discrepancy between the translation and the Japanese original, the latter shall prevail.