



## ◆ Company Profile



■ NEXCO East is engaged in expressway management, construction, rest area business, and expressway-related businesses in Eastern Japan.

Expressway Business

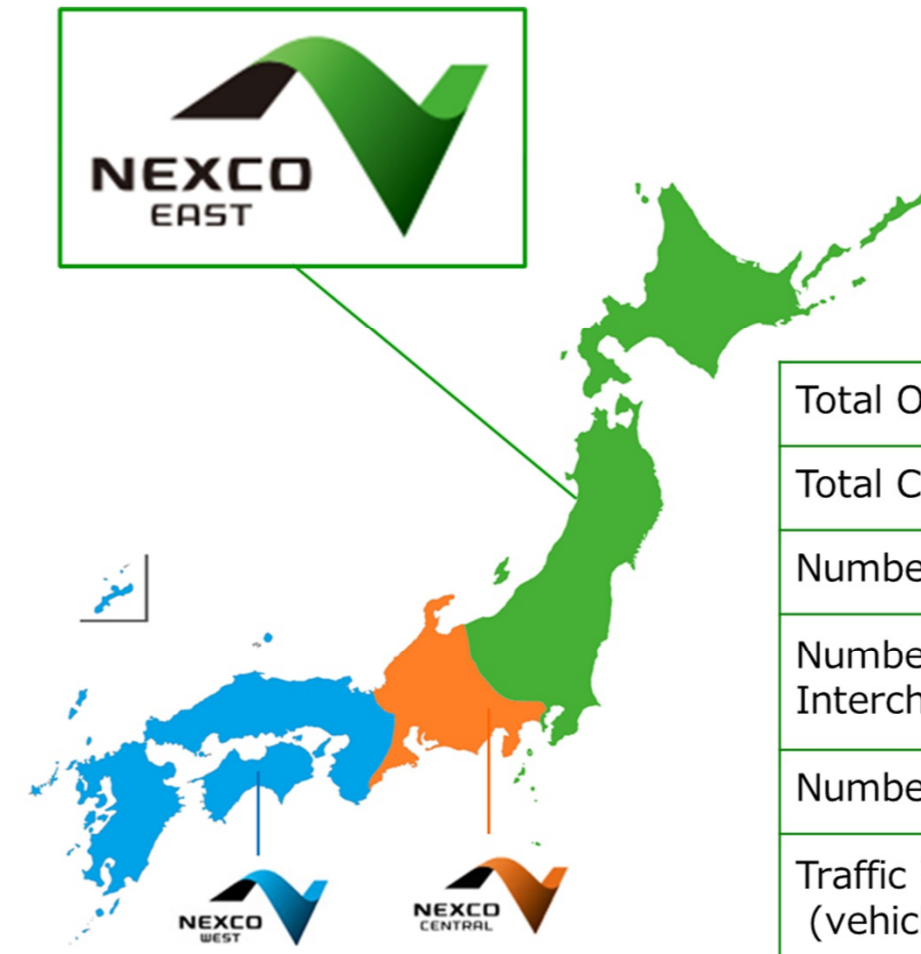



Management
Construction

Related Businesses

Rest Area Business
Other Expressway-Related Businesses



Total Operation Length	3,943km*
Total Construction Length	85km*
Number of Interchange	446*
Number of Smart Interchange	68*
Number of Rest Area	329*
Traffic Volume (vehicle passing per day)	3.02 million Vehicle /day**

\*As of April 2025, \*\* in FY2024

## ◆ Tunnel Construction Using i-Construction (ICT)

■ In this project, an i-Construction (ICT)-based model construction approach was implemented at the Hōshusan Tunnel (total length: 631 m). The initiative aimed to improve construction efficiency and enhance safety.

### Initiative ① : Integration of CIM Models and Construction Data(Efficiency Improvement)

#### Overview

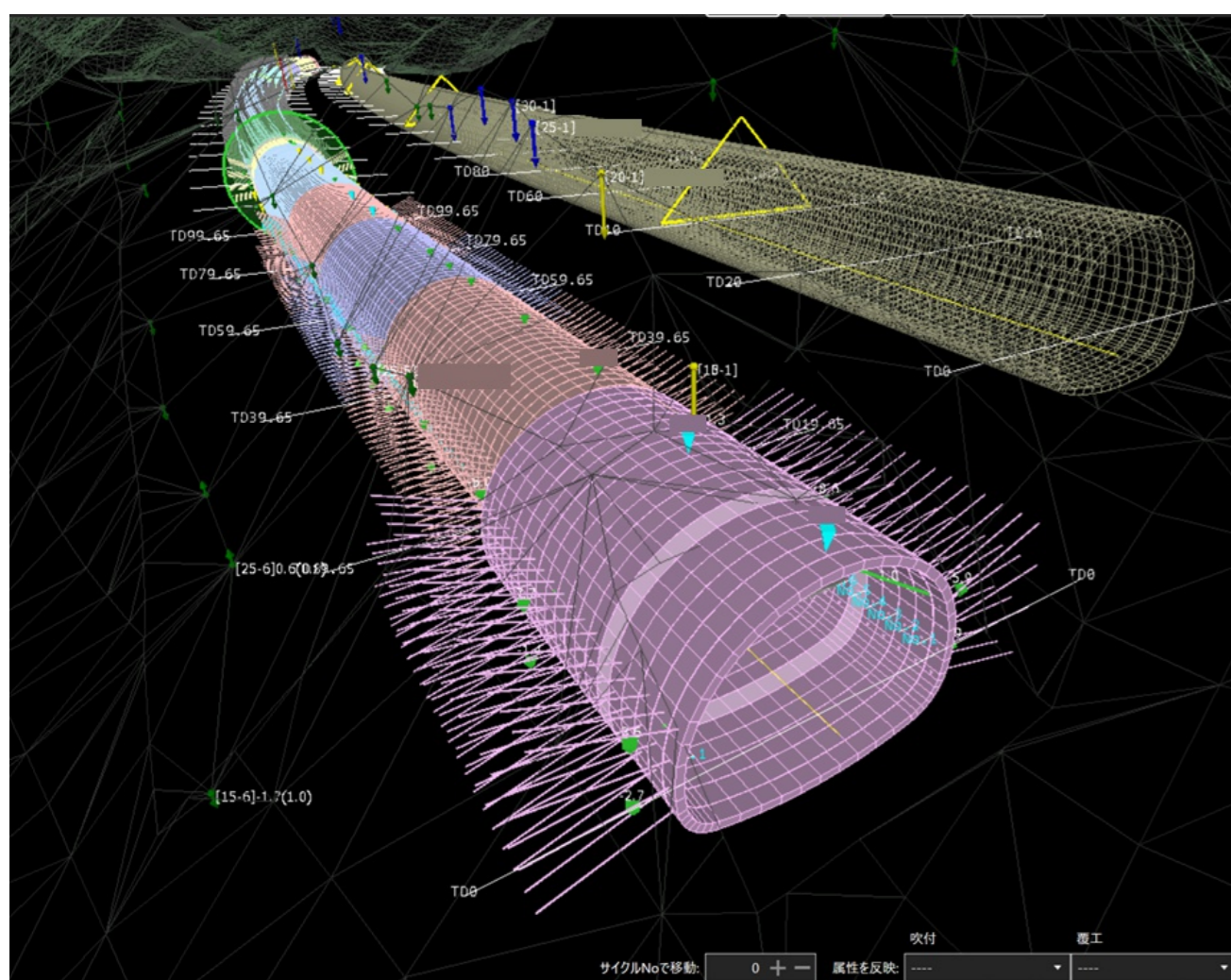
1. Creation of a 3D Design Model (CIM Model) based on conventional 2D design drawings.  
**Conventional approach:** Construction progress was confirmed by comparing multiple 2D drawings such as plan views and cross-sections.  
**Improved approach:** The use of a 3D model enabled visual and intuitive understanding of construction details.
2. Integration of Quality Control and As-built Management Data to the CIM model during construction.

**Conventional approach:** Required data was searched from many documents prepared for each construction unit and control item.

**Improved approach:** Quality control and as-built data were automatically or semi-automatically integrated to the CIM model, enabling centralized data management.

#### Results

1. Enhanced understanding of on-site conditions through 3D visualization  
 → Construction personnel gained a better understanding of site conditions and reduced meeting time.
2. Direct access to construction data from the CIM model  
 → Reduced operational time and significantly improved productivity.



Attribute Information		
Name	Value	Decision
Route Name	Hōshusan Tunnel	
CycleNo	6	
StartTD (STA)	4.85 (STA)	
EndTD (STA)	5.85 (STA)	
Pattern	D11a(H)-AH-K-L	
Cycle Timestamp	2023/05/12 17:00:00	
Overburden (m)	0.852	
Evaluation Score	0	
Face Photo (Before)	1MP0006.PNG	
Face Photo (After)	P1C0006.PNG	
Face Observation Record	06_切羽観察記録	
AI-based Face Observation Record	06_AI切羽	
Developed Drawing	P2C0006.JPG	
Cross-sectional Drawing	P3C0006.JPG	
Longitudinal Section Drawing	P4C0006.JPG	

### Initiative ② : Remote Operation in Hazardous

#### Areas(Safety Enhancement)

#### Overview

##### Conventional approach:

Workers visually inspected conditions near the tunnel face and operated machinery directly on site.

##### Improved approach:

A remote-controlled shotcrete machine and a camera trolley were installed near the tunnel face.

Operators monitored real-time conditions using camera and performed remote operations, such as Installation of steel supports, Shotcrete spraying work.

#### Results

Reduced worker presence near the tunnel face, where the risk of rock falls is high.

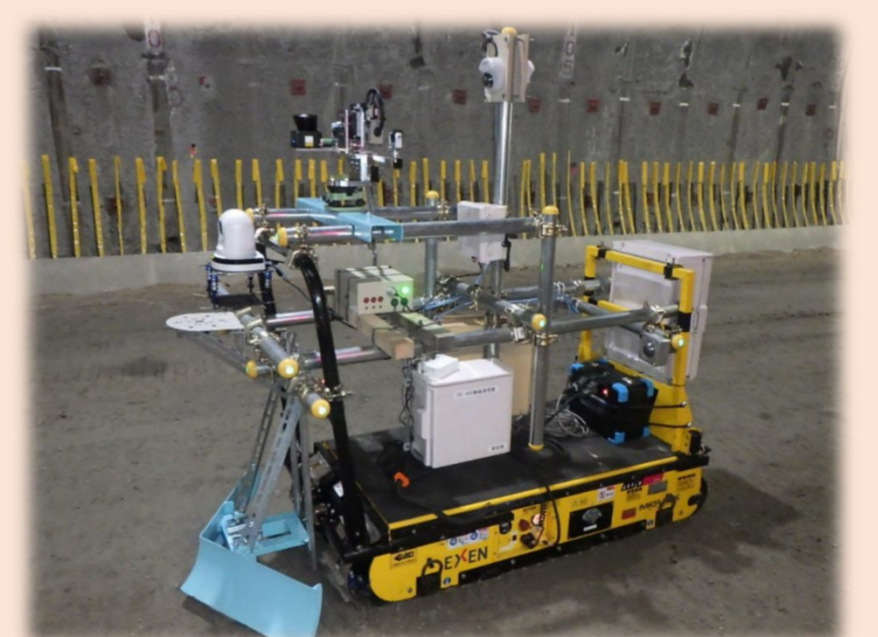
Minimized entry into hazardous zones, significantly lowering the risk of accidents and improving overall site safety.

#### Machinery installed near the tunnel face

【Remote-controlled shotcrete machine】

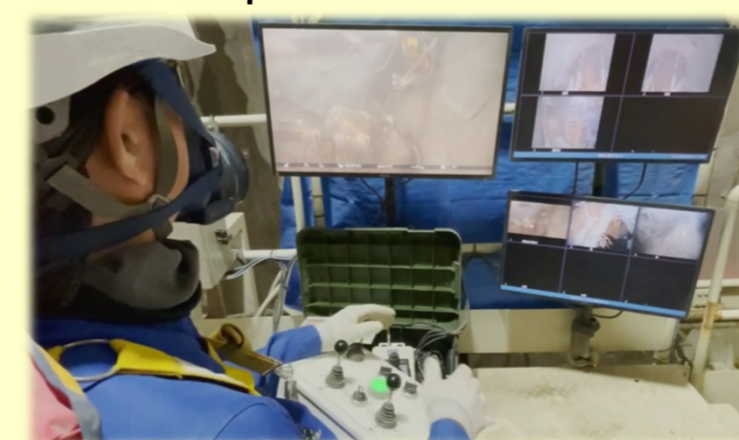


【camera trolley】



#### Remote operation control

【Remote operation control room】



【camera】

