

Safe, reliable and comfortable expressways connect people and regions respectively. Aspiring ideas and sincere service bring new encounters and joy. NEXCO-West Group will continue to innovate technology for the next 100 years, and strive to create new values.



Our expressway history starts from Y1963, now we operate **3,603km** with **8,418** Bridges, **906** Tunnels, **1,406** Culverts and **313** Rest Areas.

## Initiatives of Inspection Technology (Non-distractive methods)

**Tunnel liner inspection with line censer "eQ Doctor T"**

**Key features**

- 1) High vehicle speed running at 100 km/h.
- 2) High resolution of 0.2 mm width crack
- 3) In-visible light scanner

**Road surface inspection "DTSS" & "Smart Eagle"**

**Key features**

- 1) Under taken at normal driving speed
- 2) Deflection filter enables more clear imaging
- 3) Mounted on a normal vehicle

**Concrete slab inspection with infrared camera "J system Evolution"**

**Key features**

- 1) Improved resolution incorporated with deflection filter
- 2) Improved operability and safety without traffic regulation
- 3) Efficient assessment with dedicated software

**High resolution camera with AI "Auto CIMA"**

**Key features**

- 1) Remote inspection (Max. distance 50~70m)
- 2) Alternative method for proximity inspection
- 3) Automatic and autonomous system with AI

## Operation & Maintenance of Inter-city Expressway Network

### Renewal and Major Rehabilitation Projects

-Bridge, Viaduct, Tunnel & Cut slope-

**Superstructure replacement :**  
Casting in place hollow slab deck → Simple steel girder + Precast concrete slab

**Chugoku Expressway**  
Residential area  
Osaka Monorail  
Residential area  
Prefectural Road 2  
Osaka Chujo Belt way

The environmental condition of the projects. Conventional crane method seems inefficient in works schedule.



After removal of superstructures, by jacking up assembled superstructures in one batch and connecting them simultaneously, the major part of replacement works will be proceeded efficiently.

### "Superstructure batch replacement with jack-up"

**Cut slope reinforcement**  
Installing *new ground anchors* instead of ruptured anchors to maintain cut slope stability *due to deterioration and additional ground forces generated over time.*

**Concrete liner reinforcement**  
Reinforcement of *cracked tunnel liners* with aging and deterioration by *carbon fiber sheet*

**Invert installation**  
Reinforcement with *installing invert* to prevent pavement and liner *from deformation by heaving*

## Restoration project of damaged tunnel

Damaged by Fire : **Amakoyama** tunnel 2023.9.5~12.15

**Flare caused by a car accident**  
(Hyogo Prefectural Police Department)

**Damaged tunnel by blaze**

**Cracks on liner and burned cables**

**Debris over pavement**

**Damaged tunnel**

**Soundness assessment of liner condition**  
By hammer sounding, sample core test and pH test

**Tunnel liner restoration works**

Removing damaged concrete of tunnel liner

Water proof sheet installation

Concrete casting in place with movable steel form

**Surface treatment works against peeling off**

Anti-peeling treatment

Cleansing surface for coating

Surface coating with resin

**Condition of entrance and inside of the westbound tunnel before resuming service**