

# Safety and Security

## Technical Emergency Control FORCE

<Main dispatch achievement>	The number of people	The total number of workdays (person, days)
2017 Heavy rain in North Kyushu	36	398
2017 Typhoon 21 (Kinki)	39	55
2018 Heavy snowfall in the Fukui region	39	75
2018 Northern Osaka earthquake	141	346
2018 July 2018 heavy rains	264	965
2018 Typhoon 21	67	92



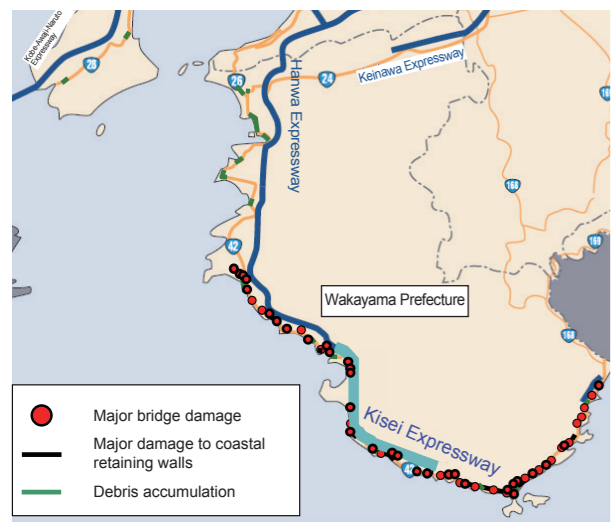
Drainage work at Kansai International Airport (2018 Typhoon 21)

## Plan for opening up roads on the coast of the Kii Peninsula after a Nankai megathrust earthquake and/or tsunami

### 【National highway damage forecasts】

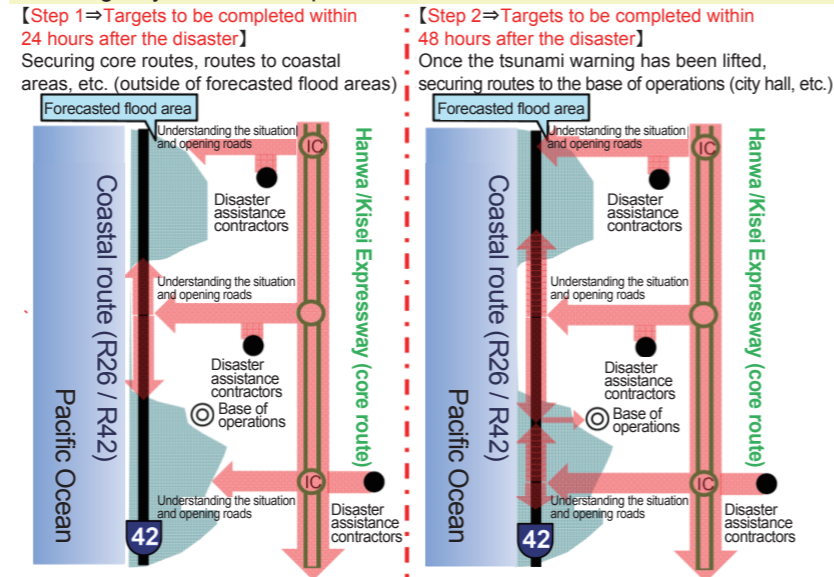
	Extent of inundation	Major bridge damage	Major damage to coastal retaining walls	Accumulated debris
Wakayama Pref.	Approx. 100 km	53 bridges	Approx. 20 km	Approx. 30 km

Source: Wakayama Kinan Office of River and National Highway (Data valid as of May 2014)



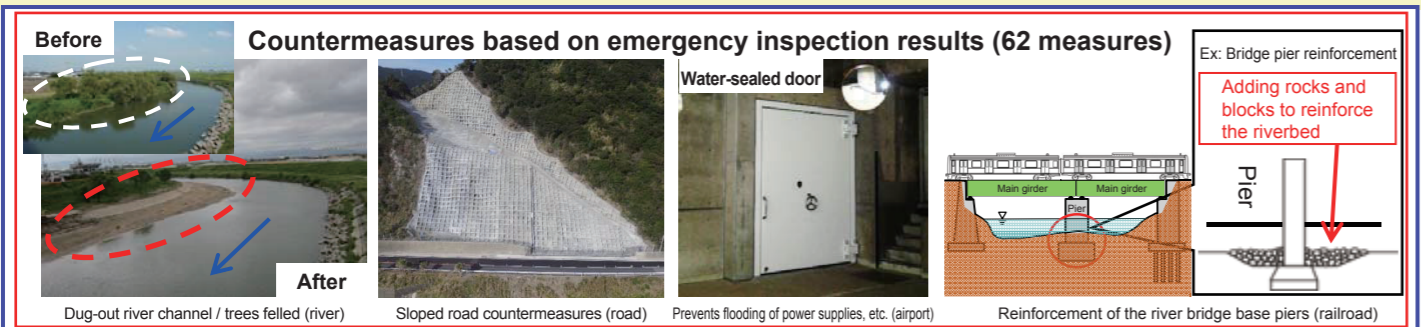
### 【Plan for opening up roads】

- Based on tsunami damage forecasts, the Wakayama Prefecture Road Accessibility Plan designates certain roads as "open routes" that are to be given priority in the post-disaster clearing process due to considerations pertaining to emergency transport roadway networks.
- Establishes step-by-step targets for "road-opening" aimed at securing emergency medical transport routes.



## Three-year emergency measures for disaster-preparedness, disaster mitigation, and national resilience

- In addition to the "Key Infrastructure Emergency Inspection Results and Countermeasures" (Nov. 27, 2018), these measures are based on past inspection results and aim to implement urgent "soft" and "hard" countermeasures within a concentrated three-year period from the following perspectives:
  - Maintaining functionality of key infrastructure for disaster-preparedness reasons
  - Maintaining functionality of key infrastructure underlying the national economy and people's everyday lives.
- The Ministry of Land, Infrastructure, Transport and Tourism implements 67 emergency measures: 62 countermeasures based on emergency inspection results and 5 countermeasures based on past inspections.



### Measures based on past inspection results (5 measures)

- Period: Three-year period between FY 2018 and FY 2020
- Targets: To complete (generally) or make tremendous progress on countermeasures with the aims of disaster preparedness, disaster mitigation, and strengthening national resilience.

# New approaches

## Developing a sustainable construction industry

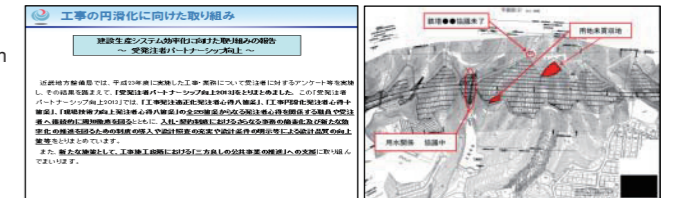
The working-age population is shrinking throughout Japan. The construction industry is sustained by the baby-boomer generation, which is expected to retire in droves in around a decade. This calls into question the sustainability of the construction industry in the years ahead. In order that the construction industry can continue to fulfill its roles in disaster response and infrastructure building and maintenance, these projects aim to strengthen initiatives to reform workstyles and improve productivity in the industry.

## “Two holidays per week” initiatives

- Implement initiatives based on the necessity of ensuring two holidays per week for employees in the construction industry.
- Implement initiatives to improve work environments for design work, etc.

### Appropriate construction schedules

- Implement a "construction schedule support system" that enables the computation of schedules with two holidays per week
- Review and reconsider preparation and cleanup periods for construction projects
- Specify conditions for setting schedules
- Consolidate construction processes (critical passes) for order-receiving and order-placing
- Use a system that allows for wide margins



### Revision of expenses to account for two holidays per week

- Revise labor costs, equipment rental costs, and indirect costs

### Scoring of public works assessment results

- Add "ensure two holidays per week" into construction progress management processes
- Add "workstyle reforms" under imagination and creativity

### Guidelines for operational improvements (weekly stance)

- Do not set deadlines on the day after a holiday (e.g. Monday)
- Do not issue new requests on the day before a holiday (Friday, etc.)
- Do not issue requests outside of working hours on "no overtime days"
- Do not conduct meetings during lunch breaks or after 5 PM
- Create time for work appropriate for the work content
- Confirm and share other points between those issuing and receiving orders

## Improving Productivity "i-Construction"

Productivity of each worker at construction site shall be improved, the business environment of the company shall be improved and the wage level of people working at construction site shall be increased and safety shall be ensured.

### What to Focus On

- Improve business environment of company by increasing productivity of each worker.
- Make construction site more attractive by increasing the wage level of people working at construction site.
- Aim at Zero fatal accident at construction site.
- Aim for "salary, vacation, and hope" instead of "tight, dangerous, and dirty."

### The Action System of the Kinki Regional Development Bureau

For the i-Construction spread, we cooperate with people of learning, countries, local public entities and work groups concerned, and for local governments, we actively install a consultation window as well as hold classes, visits to spot parties for a construction supplier.

- Establishment of an i-Construction model office and support office (FY 2019)
- Establishment of the i-Construction Kinki support center (April 2017 establishment)
- Posted an ICT promotion adviser in each prefecture (June 2017 placement)
- Introduction of the registration system of the ICT technique inspector (December 2016 introduction)

### Approaches to Further Deepening

#### Full usage of ICT technologies

- Spread of ICT utilization construction promotion (earthwork, paving and dredging)
- Expansion of the application mechanic class (soil stabilization work, covering works, etc.)
- Expansion of the three-dimensional design
- ICT introduction examination in the fields of maintenance and government office repairs

#### Total optimization

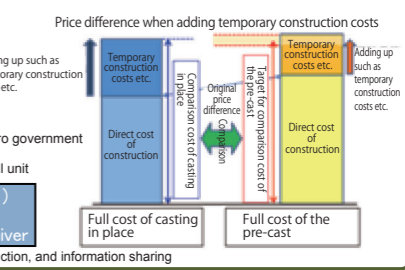
- The development and expansion of guidelines
- Utilization of the pre-cast (clarification of the comparison)

#### Equalization of construction period

- Further inflection of the two years national debt, setting of zero government bonds
- Unification and publication of the ordering outlook by the local unit

#### (Kinki Regional Development Bureau's PLUST)

- Facilitation of construction work owing to communication between orderer and order receiver
- Implementation of regular meetings on the progress of construction, and information sharing



### BIM / CIM usage

Use 3D modelling (visualization) in the studying / design stage, construction stage, and maintenance stages to view structures in their final state, enabling the prediction of various benefits, greater work efficiency, and greater productivity throughout all construction operations.