

Safety and Security

Technical Emergency Control FORCE

<Main dispatch achievement>	The number of people	The total number of workdays (person, days)
2018 Northern Osaka earthquake	141	346
2018 July 2018 heavy rains	264	965
2018 Typhoon 21	67	92
2019 Heavy rain in late June	11	55
2019 Heavy rain brought by a rain front in August	26	153
2019 Typhoon 19	239	1,486

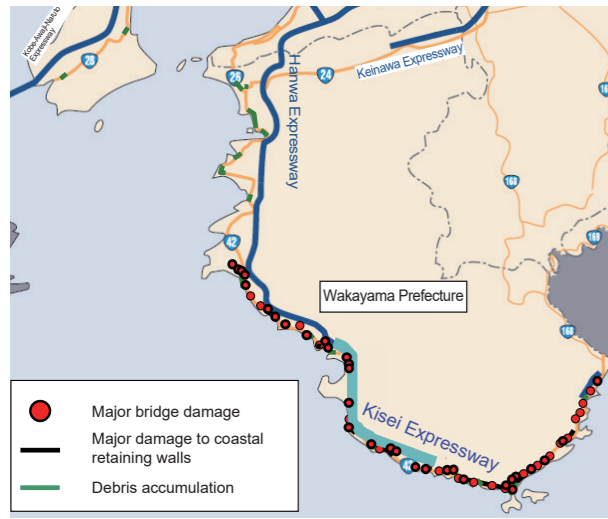


Plan for opening up roads on the coast of the Kii Peninsula after a Nankai megathrust earthquake and/or tsunami

[National highway damage forecasts]

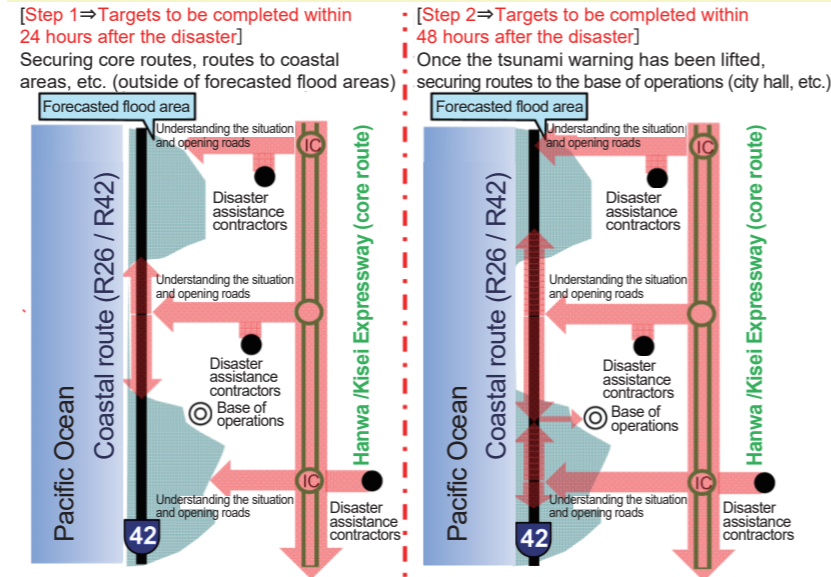
	Extent of inundation	Major bridge damage	Major damage to coastal retaining walls	Accumulated debris
Wakayama Pref.	Approx. 100 km	53 bridges	Approx. 20 km	Approx. 30 km

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)

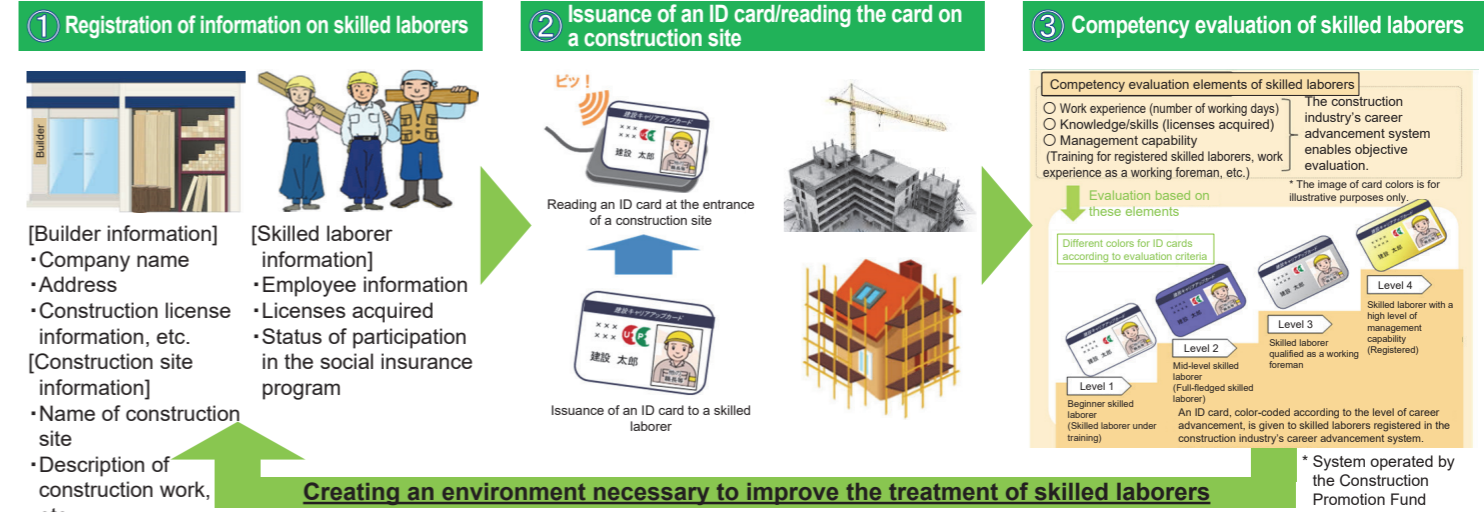
- Period: Three-year period between FY 2018 and FY 2020
- Targets: To complete (generally) or make tremendous progress on countermeasures with the aims of disaster preparedness, disaster mitigation, and strengthening national resilience.

New Approaches

Initiatives to realize the new three "Ks" in public works carried out under the MLIT's direct jurisdiction

- Implementing various initiatives, including model construction work, in public works carried out under the direct jurisdiction of the Ministry of Land, Infrastructure, Transport and Tourism (MLIT), in order to realize the new three "Ks" (*Kyuyo* (compensation), *Kyuka* (holiday), and *Kibo* (hope)) in the construction industry
- Ensuring the safety and security of local communities and supporting the local economy by developing human resources in the construction industry from a mid- to long-term perspective

<Compensation> Promoting utilization of the construction industry's career advancement system



<Holiday> "Two holidays per week" initiatives

- 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
 - Share information on companies ordering/receiving construction work through regular meetings to check work progress
- 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"
 - Create time for work appropriate for the work content (Ensuring at least three days' rest as part of the standard work period)
 - Do not conduct meetings during lunch breaks or after 5 PM
 - Conduct web meetings to talk about minor matters in the course of work
 - Have a chief examiner attend meetings in which important decisions are made on highly technical work
 - Confirm and share other points between those issuing and receiving orders

<Hope> "i-Construction"

- 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"
- 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.
- Approaches to further deepening**
 - Full usage of ICT technologies
 - Promotion of construction work using ICT (earthwork, paving, dredging, soil stabilization, slope protection, ancillary structure installation, etc.)
 - Expansion of the types of applicable work (soil stabilization (deep layer), paving (repairs), etc.)
 - 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