Theme 1. Challenges and visions for construction

A New Stage of Construction in Japan

i-Construction

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Background for Necessity of Innovation in Japanese construction
Population Movement and Prediction in Japan

Real number
Estimation

Total Population
Working age population
Rate of aging (65~ )

× 10,000

Statistic Bureau, Ministry of Internal Affairs and Communications
Population Pyramid in Japan for 2015 - 2055
The decrease in the number of construction engineers and workers will accelerate.

Reduction of the tax revenue → Shrinking of budgets for public investment.

Working-age population will fall to 69.7% after 30 years.
From the point of view of maintenance and management
Change of Infrastructural Investment

Compared with the 1990s, although new construction reduces by half, repairs and renewals increase slightly.
From the Point of intensifying Natural Disaster

Number of times per year when hourly rainfall exceed 50 mm

Trend of increasing number of heavy rain

( By Japan Meteorological Agency, Ministry of land, infrastructure and transport )

Natural disasters has been intensifying in Japan.
Reasons that Japanese construction should change

Decrease of working age population will bring
• Lack of engineers, workers in construction
• Reduction of the tax revenue → Shrinking of budgets for public investment.

Increase of the complicated and difficult jobs for maintenance and disaster prevention

We cannot complete our social part of providing the infrastructures stably with some extending methods from the current ones.
Industrial Potential of Japanese Construction

Lower wage level than other industries
(76% of the all-industry average)

Longer working hours than other industries
(118% of all-industry average)

32% death number of all-industry

(From Japan Federation of Construction Contractors: Handbook for Construction Industry 2017)
Comparison of Changes in Labor Productivity by Industry

**Wedge level**: 76% of the all-industry average
**Working hours**: 118% of all-industry average
**Death number**: 32% of all-industries

Construction industry has enough potential to increase the productivity.

★ Kitsui (Hard)
★ Kitanai (Dirty)
★ Kiken (Dangerous)

(Productivity = Real gross added value/(Number of employed persons x Total labor hours per year)

(From Japan Federation of Construction Contractors: Handbook for Construction Industry 2017)
A New Policy of the Ministry of Land, Infrastructure and Transport

i-Construction

Remarkable Improvements in Productivity through

- Aggressive Use of ICT in Construction
- Standardization of the Specifications
- Balancing of Orders throughout a year

Hard
Dirty
Dangerous

High wage levels
Sufficient holidays
Safe labor environment

Drastic Development as an industry
Aggressive Use of ICT in Earthwork

Configuration data of structures are grasped and treated with 3D data, and various advanced ICT tools are introduced in i-Construction.

Surveying  Design Planning  Construction  Inspection

The works are executed with 2D data at each stage in conventional method.
Expansion of Aggressive Use of ICT to

Paving works (2017.4〜)

Dredging works (2017.4〜)

Bridge construction

Sewage management
Thank you for your kind attention