

Two years have passed since The Great East Japan Earthquake and disaster restoration projects at some ports are going to be completed. Considering that the projects require large quantity execution of works in a short period, and that engineers, materials and machines for restoration works were running short, the feature of this month introduces some actual cases, showing what problems lied in them and how they were solved.

Meanwhile, lessons from the earthquake result in technology developments and some of the developments are actually used for the disaster restoration projects. The feature of this month also reports the progress and result of the technology development, expecting to be some hints for measures against future earthquakes and tsunamis.

■ *SPECIAL ESSAY*

Future measures against tsunami and technology development~shift from disaster prevention to disaster mitigation~ /Shigeo Takahashi

■ *restoration of damaged port facilities*

North breakwater at Port of Hachinohe, Aomori /Hisashi Harada

Bay entrance breakwater at Port of Kamaishi, Iwate /Takashi Oikawa

Bay entrance breakwater at Port of Onagawa, Miyagi /Junichi Karino

Port of Souma, Fukushima /Masaomi Yamauchi

Gantry crane restoration at North pier at Port of Ibaraki (Hitachinaka District)
/Shuji Otsuka

Warf at North pier at Port of Ibaraki (Hitachinaka District)
(depth 14m, 12m, 10m, berth length 700m) /Takeshi Watanabe

■ *restoration project of private port facilities*

Tohoku grain terminal, waterfront grain silo, in Hachinohe, Aomori
/Hiroshi Enomoto

Loading facilities of coal and heavy oil at Shinchi power plant of Soma Kyodo Power Company, Ltd, Fukushima /Masahito Nagi

Port facilities of Kashima iron plant, Ibaraki, of Nippon Steel & Sumitomo Metal Corporation /Kentaro Matsuyoshi

■ *TECHNOLOGY DEVELOPMENT derived from lessons of The Great East Japan Earthquake*

Anti-tsunami design of breakwater and levee at port /Hideto Hikiyashiki

Application and development of ultrasonic wave sonar technology

/Sayuri Matsumoto

Advances in liquefaction prediction method /Shinji Sassa

Evaluation of remaining proof stress at upper structure of pier damaged by earthquake shake /Yuichiro Kawabata