Special Topic 1

# Railways as lifeline infrastructures in the Eastern Japan area

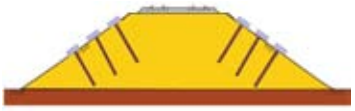
A year and a half of restoration and reconstruction following the Great East Japan Earthquake

## Our future measures against earthquakes

Learning from the experiences of the Great Hanshin-Awaji Earthquake of January 1995, the Sanriku Minami Earthquake of May 2003, and the Mid Niigata Prefecture Earthquake of October 2004, JR East has introduced seismic reinforcement measures to its elevated bridge columns, bridge piers, tunnels, and station buildings, taken preventive measures against derailments, and increased the number of locations where seismometers are installed.
Owing to these measures, at the time of the Great East Japan Earthquake on March 11, 2011, no customers on board our trains were killed or injured.
Since FY2010, JR East has expanded its countermeasures and initiated the 2nd phase of its seismic reinforcement measures, including further seismic reinforcement of its elevated bridge columns. In addition, JR East plans to introduce the following as further measures against earthquakes.

① Seismic reinforcement measures for embankments, earth cuttings, arched elevated brick bridges, and power poles, and measures to prevent the collapse of station platform ceilings and walls in the event that an earthquake directly strikes the Tokyo metropolitan area. JR East will also accelerate the implementation of its plans for the on-going seismic reinforcement of its elevated bridge piers.
② Seismic reinforcement measures for station buildings where the number of boarding and alighting passengers exceeds 3,000 persons per day, and for Shinkansen power poles, many of which were damaged by the Great East Japan Earthquake.
③ Strengthened anti-disaster telecommunication functions, including an increase in the transmission speed of seismometer measurement data, and the reinforcement of its emergency power sources for its communication network.

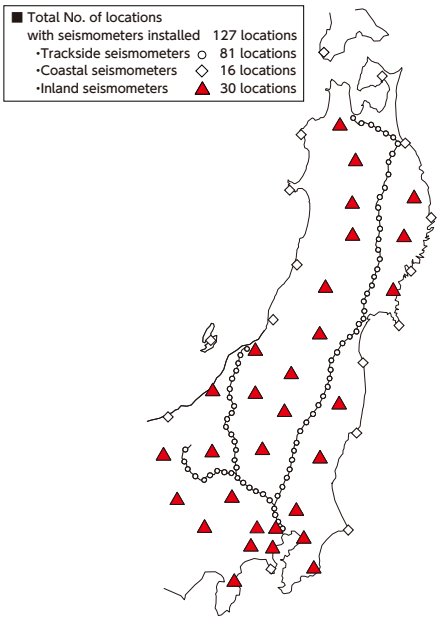
JR East is committed to the promotion of these seismic reinforcement measures for at least the next five years, and to continuation of its efforts to bring further improvements to the disaster resilience of its railways.



・Strengthened embankments with reinforced materials
・Installation of anti-derailment guards

Examples of damage to embankments and methods for reinforcement

Examples of seismic reinforcement




Installation status of seismometers

## Measures for tsunami evacuation

Prior to the occurrence of the Great East Japan Earthquake, JR East had designated tsunami hazard areas and set rules for operational restrictions for each of its service areas, formulating manuals and conducting drills to guide the escape of passengers from trains. After the Great East Japan Earthquake, JR East reviewed all of its rules, manuals, and drill. In consideration of our findings, JR East decided upon the following measures.

① A reexamination of our tsunami warning zones based on hazard maps of municipalities and tsunami flooded areas resulting from the Great East Japan Earthquake.
② A reexamination of our rules for operational restrictions in the case of a tsunami warning.
③ The formulation of a set of guidelines as a fundamental method for guiding passengers in tsunami evacuation.
④ A plan to increase the number of locations of evacuation route maps and signage at and between stations.
⑤ A joint project with local municipalities to install emergency stairs to evacuation shelters and signage to indicate escape routes.
⑥ A review and revision of tsunami handling manuals for locations at risk.
⑦ A plan to conduct annual regular training and drills around the anniversary date of March 11.

A drill to guide passengers in getting off trains

## Conducting drills and providing support to people with difficulties in returning home

When train service was interrupted at the time of the Great East Japan Earthquake, stations were crowded with a large number of customers. In future instances, after confirming the safety of our facilities, JR East will keep passenger restrooms and public phones open and available at stations in the Tokyo metropolitan area, provide customers with as much information as it can, and offer temporary shelter spaces at approximately 200 stations. Moreover, at approximately 30 major terminal stations, including Tokyo and Shinjuku Stations, JR East is now storing stockpiles of supplies including drinking water, blankets, and first-aid kits for children and the elderly.
Furthermore, at Shibuya and Chiba Stations on September 1, 2011, and at Tokyo, Shinjuku, and Ikebukuro Stations on February 3, 2012, JR East conducted joint drills with the local municipalities to increase our ability to support people experiencing difficulty in returning to their homes in the event of a disaster. Together with local municipalities, JR East is working to share pertinent issues with the public, and to be better prepared in the event of a disaster.

A drill at Tokyo Station

## Measures to support the restoration of disaster-damaged areas in FY2012

JR East marketed the JR East Pass in 2011 to support travel to the disaster-damaged areas for restoration, personal visits, and homecoming, and to assist in the revitalization of sightseeing destinations in the disaster-damaged areas. In addition, in an effort to utilize the vitality generated from Aomori Prefecture to help revive the sightseeing destinations of the Tohoku region, and to lend spirit to the country as a whole, 6 JR companies, together with Aomori Prefecture, began the Aomori Destination Campaign on April 23, 2011. The 6 companies have since continued their joint campaigns, including Connecting Japan – Smiling faces of travelers to energize Tohoku – and GO! TOHOKU, in promoting measures to increase travel to the Tohoku area. Moreover, JR East has donated part of its revenue generated from the sales of Tohoku Shinkansen GranClass tickets and travel products to the Tohoku area as relief support.

JR East Pass


Aomori Destination Campaign poster

Also, in the immediate aftermath of the Great East Japan Earthquake, JR East began selling groceries at the shop fronts of S-PAL Sendai and EXCEL Mito in the disaster damaged areas. In the Tokyo metropolitan area, at Ueno and other stations, to further support the disaster damaged areas, JR East also held Support Tohoku fresh markets and Tohoku product and craftwork fairs. At these events, while presenting the attractiveness of each disaster-affected prefecture, JR East sold vegetables, processed products, and traditional craftwork from each of the Tohoku areas.
Group companies related to the Life-Style business continue to support the restoration of the disaster-affected areas through such volunteer activities as soup kitchens, donations of relief money through sales, and the creation of menus using food ingredients from the areas.

Support Tohoku fresh market

## Restoration measures for disaster-affected areas

Currently, we are coordinating our efforts to restore conventional lines along the northeastern Pacific coast that were severely damaged by the tsunami, with additional plans to rebuild the area as a whole and develop towns, and have been engaged in discussions with the relevant national and local government authorities regarding these initiatives. To date, service has resumed along the entire Hachinohe Line and in sections of the Joban Line, Senseki Line and other lines, and we plan to replace the tsunami-destroyed track on the Senseki Line between Takagimachi and Rikuzen-ono, the Joban Line between Soma and Watari, and the Ishinomaki Line between Watanoha and Urashuku. As an interim method of restoring safe transportation services, on August 20, 2012 we established BRT (Bus Rapid Transit service) along the Kesennuma Line, and are considering BRT and various other proposals for the Yamada Line and Ofunato Line. Meanwhile we are serving local customers by operating bus routes to temporarily replace the lines that remain out of service.

As part of our work for restoration of the tsunami-damaged railway lines, JR East has been coordinating efforts between local municipalities and the related departments of its Head Office and Branch Offices. Having reviewed our support structure for a year, we established the Reconstruction Planning Department at Corporate Planning Headquarters on May 1, 2012 in order to further strengthen and promote more comprehensive measures for restoration.

Currently, the Reconstruction Planning Department is working in coalition with related organizations and local municipalities to restore the damaged coastal railway lines.