

# Toward Restoration from the Earthquake and Revival of Community

## Measures against earthquakes

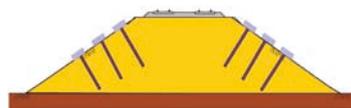
Learning from the experiences of the Great Hanshin-Awaji Earthquake of January 1995, the Sanriku Minami Earthquake of May 2003, and the Mid Niigata Prefecture Earthquake of October 2004, JR East has introduced emergency train stop measures, seismic reinforcement measures to its elevated bridge columns, bridge piers, tunnels and station buildings, taken preventive measures against derailments, and increased the number of seismometer locations. Thanks to these and other measures, nobody on board our trains was killed or injured at the time of the Great East Japan Earthquake of March 11, 2011.

Since FY2010, JR East has expanded its countermeasures and initiated the 2nd phase of its seismic reinforcement measures, including further seismic reinforcement of elevated bridge columns. In addition, JR East has designated the five years from FY2013 as a priority improvement period and strives to provide disaster-resilient railways through the introduction of the following measures:

- 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 if an earthquake directly strikes the Tokyo metropolitan area. JR East will also accelerate the implementation of its plans for continuing the seismic reinforcement of its elevated bridge columns and 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 during the Great East Japan Earthquake.
- ③ Strengthening of anti-disaster telecommunication functions, including an increase in the transmission speed of seismometer measurement data, and the reinforcement of emergency power sources for our communication network.



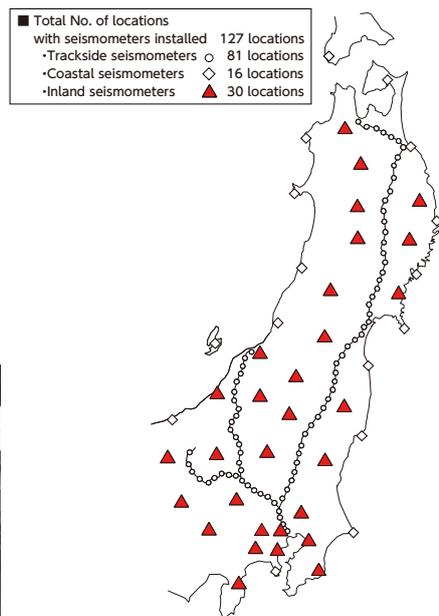
Examples of damage to embankments and methods for reinforcement



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



Examples of seismic reinforcement



Installation status of seismometers

### Measures for protection against tsunami

Prior to the 2011 Great East Japan Earthquake, JR East had already designated tsunami hazard areas and set operational restrictions for each of its branch offices, formulated manuals and conducted drills in the guidance of passengers evacuating from trains. After the earthquake, JR East further reviewed all of its tsunami-related rules, manuals, and drills, and then, based on the reviewed rules and established policies, took the following actions in FY2013:

- Establishment of tsunami warning zones in each of our branch offices after reexamination based on hazard maps of municipalities and tsunami flooded areas resulting from the Great East Japan Earthquake.
- Systematic improvement of displays showing evacuation route maps and signage at and between stations.
- Installation, working jointly with local municipalities, of emergency stairs to evacuation shelters and of signs to indicate escape routes in places where evacuation is difficult.
- Establishment and review of tsunami response manuals in all workplaces that could be at risk.
- Implementation of regular education and training around March 11 in all workplaces that could suffer from tsunami, based on Tsunami Evacuation Principles, tsunami response manuals, and other sources.



A drill to guide passengers in getting off trains



Evacuation route map

### Drills and support provision for people facing difficulties getting home

When train services were interrupted during and after the 2011 Great East Japan Earthquake, stations were crowded with passengers. In the future, after confirming the safety of our facilities, JR East will strive to keep passenger restrooms and public phones open and available at stations throughout the Tokyo metropolitan area, provide customers with as much information as possible, and offer temporary shelter in concourses and elsewhere at approximately 200 stations. These designated stations have been listed on the JR East website since March 5, 2013 and information on temporary shelter spaces and requests to customers has been widely publicized as station initiatives that would follow large-scale earthquakes.

At approximately 30 major terminal stations, including Tokyo and Shinjuku, JR East has been stockpiling supplies including drinking water, blankets, and first-aid kits for children and the elderly. In FY2014 this project will be expanded to approximately 170 stations within a 30-km radius of Tokyo.

JR East also has conducted joint drills with the local municipalities to increase our ability to support people who are having difficulty returning to their homes in the event of a disaster affecting major terminal stations. Together with local municipalities, JR East is working to improve evacuation guidance methods in the event of disasters, and to be generally better prepared.

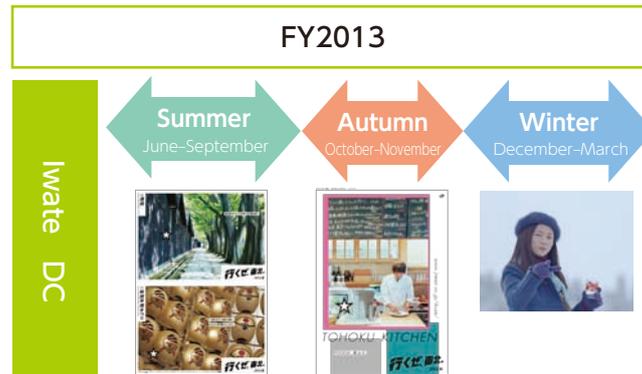


A drill at Shibuya Station

**Measures to support the Restoration of Disaster-damaged Areas in FY2013**

The areas struck by the Great East Japan Earthquake are still in the process of restoration and JR East is striving to revitalize them through the power of tourism. In FY2013, the Iwate Destination Campaign (DC) was run from April to June and was followed by the GO! TOHOKU Campaign which introduces the seasonal attractions of Tohoku, thus enabling us to continuously promote Tohoku tourism. We also provided restoration support tours that assist the disaster-damaged areas through tourism, including the Minami-Sanrikucho Recovery Market Support Tour which visits markets and shopping malls that local residents worked on as part of the restoration of their communities, the Ishinomaki and Onagawa Recovery Support Tour led by guides who relate stories of the disaster, and the Kesenuma Restoration Support Tour which incorporates an observation of our Bus Rapid Transit (BRT) dedicated road.

■ Restoration measures for disaster-damaged areas  
— Tourism Campaign —



During restoration support events in Sendai Station, Dila Nishifunabashi, and Dila Mitaka, JR East provided concrete assistance by offering sales channels for products from disaster-affected areas where production has been resumed and sales outlets for residents of disaster-affected areas. With the commencement of BRT operations along the Kesenuma and Ofunato lines, in cooperation with the local chamber of commerce and industry, we hosted events at Kesenuma and Sakari stations. The events proved very popular with residents living along the lines and also attracted many railway fans.

At Ueno and Akihabara stations in Tokyo, JR East continuously hosted events such as farmers' markets and "NOMONO" local produce shops, which focused on eastern Japan including disaster-struck areas such as Miyagi and Fukushima prefectures. During these activities, there were sales of seasonal flavor produce from agricultural producers, local sake from sake breweries, and traditional craft products and other local specialties, as well as performances of traditional culture events and the promotion of tourism through the provision of local information for each prefecture.



Farmers' market

### Tsunami-damaged Railway Lines—Basic Policy and Restoration Status

JR East has been carrying out post-tsunami reconstruction with the goal of resuming train operations on line sections where safety can be guaranteed along the northeastern Pacific coast. Services have now resumed along the entire Hachinohe Line and along sections of the Joban, Senseki, and Ishinomaki lines.

We are advancing restoration along sections of the Sensaki Line between Takagimachi and Rikuzen-ono and the Joban Line between Soma and Hamayoshida by track replacement. We also have the goal of restoring service on the full length of the Senseki Line by the end of 2015. On the Joban Line section, we will commence reconstruction in spring 2014 and plan to resume service within three years from that date. For the Ishinomaki Line section between Urashuku and Onagawa, we have reached agreement with the town of Onagawa and are preparing for restoration plan together with a scheme for the further development of the town.

The Joban Line section between Hirono and Haranomachi passes through the exclusion zone within a 20-km radius of the Fukushima Daiichi Nuclear Power Station, and we have many matters to consider regarding restoration of operations. Before making any decisions, we will consider all aspects of reconstruction, including reviews of line sections, decontamination activities implemented by the Ministry of the Environment, the condition of infrastructural redevelopment, the situation regarding the return of former residents, and requests from local governments. Restoration is already proceeding between Hirono and Tatsuta, with the goal of service resumption in spring 2014 in line with Naraha Town's decision to allow the return of its residents.

From the perspective of providing safe and highly convenient transport services at the earliest possible date, we have now established BRT systems as interim methods of transport along the sections of the Kesenuma and Ofunato lines where train service has not been restored. BRT service began on December 22, 2012, on the Kesenuma line and on March 2, 2013, on the Ofunato line.

The suspension of train operations along line sections badly damaged by the earthquake and tsunami has now been reduced from the initial 400 km to approximately 250 km, as of August 1, 2013. JR East will, of course, continue to cooperate with both national and local government authorities to bring about restoration of damaged railway lines, as well as in plans to rebuild the area as a whole and further develop towns, while at the same time ensuring that customer safety has first priority.



Exclusive roadways and vehicles for BRT