



Tokyo's New Earthquake Resistance Measures

Seismic retrofitting can help secure emergency transportation roads during times of crisis

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Japan is one of the world's most earthquake-prone countries

Hypocenter distribution map showing earthquakes occurring between 1994 and 2003 with a magnitude (M) of 5.0 or greater



Lessons from the Great Hanshin-Awaji Earthquake

The Great Hanshin-Awaji Earthquake occurred in 1995

Buildings constructed to former earthquake resistance standards (built prior to 1981) collapsed and blocked roadways



Principal roadways are essential in times of crisis

During ordinary times, principal roadways are used by many people and vehicles

In times of emergency, they become lifelines supporting evacuations, emergency medical and firefighting services, the transportation of supplies, and restoration and reconstruction activities



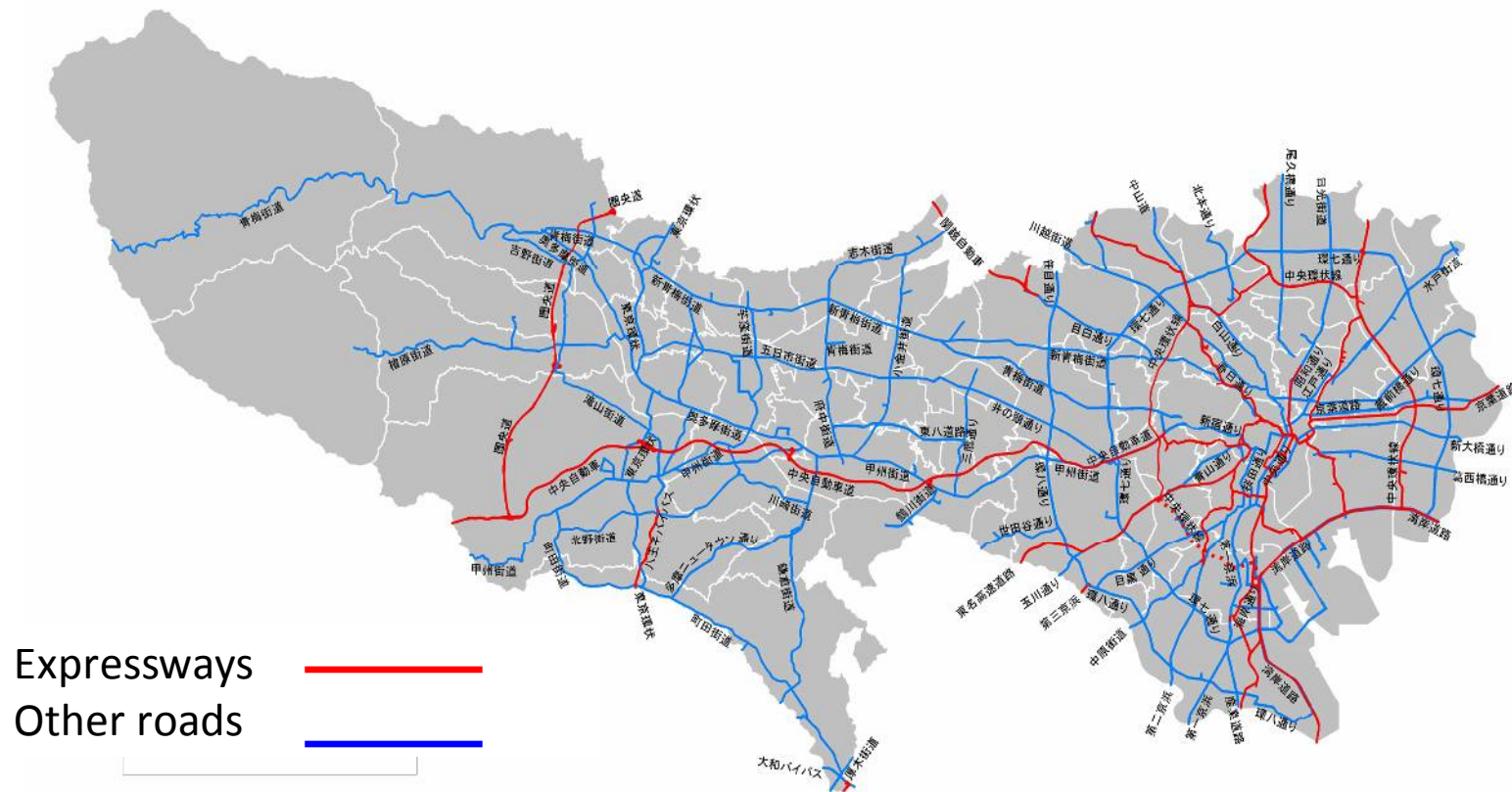
Firefighting activities



Transportation of emergency supplies

Ordinance for promoting seismic retrofitting of buildings along emergency transport roads, first such ordinance to be established nationwide (March 2011)

Designating emergency transportation roads (1,000km in total length)

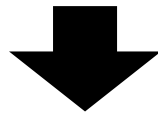


Promoting seismic retrofitting of roadside buildings (target: 5,000 buildings)

Three building owner responsibilities

Stage 1

Submit report on current earthquake resistance status of building



If earthquake resistance diagnosis has not yet been implemented

Stage 2

Implement earthquake resistance diagnosis
(there are penalties if diagnosis is not carried out)



If earthquake resistance is insufficient

Stage 3

Carry out seismic retrofitting

Generous subsidies (earthquake resistance diagnosis)

Subsidy
Ratio

(To Date)

National Government 1/3	TMG 1/6	Municipality 1/6	Building Owner 1/3
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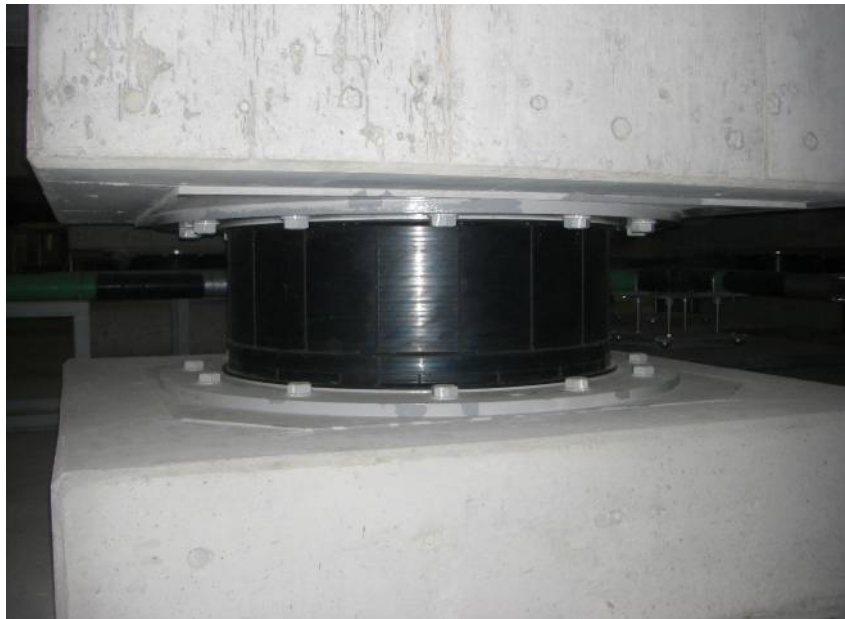


(New Measure) April 2011 ~ March 2014

National Government 1/3	TMG 2/3
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Latest methods for seismic retrofitting

Seismic Isolator



Layered Rubber

Seismic Damper



Oil Damper

Example of seismic retrofitting



Main Branch, Mitsukoshi Department Store in Nihonbashi

TMG designated historical structure
Japan's first department store (1935)



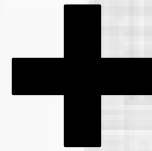
Seismic isolators
installed in building foundation

Features of method used for retrofit

1. Usable for structures fully occupying building lot
2. Parts of the building can continue to be used while construction is carried out
3. Building's original appearance can be preserved

Realizing a safe Tokyo that can withstand even a large-scale earthquake

TMG advanced initiatives for seismic retrofitting of roadside buildings



World-leading earthquake resistance technology



Complete seismic retrofitting of roadside buildings by 2015