Efforts for Technical Development of Base Building for Post-disaster Operation (Research and Development Project)

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1. Damage to government buildings and others by recent natural disasters

In the Great East Japan Earthquake, (1) structural damages by tsunami (photo 1) and (2) functional loss from damage of nonstructural members (nonstructural walls, ceiling and others) (photo 2) occurred and the damage was observed also in the government buildings which should have been base buildings for post-disaster operation. A tornado in Tsukuba City in May 2012 caused flying debris leading to massive damage to the windows and doors of a reinforced concrete building. This kind of damage may lead to the functional loss of base buildings.

2. Development of base building for post-disaster operation

In 2013, NILIM started 4-year project called Technical Development of Base Building for Post-disaster Operation as a research and development project in order to develop technology that enables base buildings to support emergency/restoration activities immediately after disasters.

For tsunami countermeasures, development shall be carried out on the reduction of tsunami wave force by façade drop-off or the blocking effect of peripheral buildings.

For earthquake countermeasures, development shall be carried out on the damage reduction of reinforced concrete nonstructural walls with appropriate arrangement of structural slits and others, and damage prevention of suspended ceilings without clearance between the ceiling and the surrounding parts and other objects.

For tornado countermeasures, development shall be carried out on a performance evaluation method for exterior wall materials.

In addition to these, development shall be carried out also on disaster preparation of equipment for operational continuity due to the importance of infrastructural continuity after a disaster, such as electricity, gas services, water supply and so on. The design guidelines of base buildings for post-disaster operation shall be made with the results of these technological developments and other current realizations.

Photo 1 Damages on building by tsunami

Photo 2 Damages on non-structural wall by earthquake

[Reference]
http://www.nilim.go.jp/lab/bbg/project/ppdf/pro-h25_5.pdf