

# ARCHITECTURAL STRATEGIES for collections **preservation**

## during and after a **NATURAL DISASTER**

*Protecting collections during and after a natural disaster is a daunting task. Natural disasters can compromise the collections by damaging the very buildings they are housed in, causing physical damage at the initial disaster event, then inflicting additional damage by loss of proper environmental conditions in the facility.*

### **CREATE THE "VAULT"**

Architectural preservation strategies include both passive and active systems designed to allow the collections "vault" to first survive the initial impact of a natural disaster, and second to continue to function at some minimal level independently from the city utilities (gas, water, electric) that may not be available after a natural disaster, and to continue to provide the correct environmental conditions for the preservation of the collection. The term "vault" may refer to anything from a small room to an entire building. In order to conserve resources and control costs this "hardening" of the building is applied to the collections vault only and not to public lobbies for example. These strategies include:

### **STRUCTURAL REDUNDANCY**

Designing the structure and the cladding beyond the basic building code requirements and adjusting for local probable events (earth quake, gale winds, hail, flooding etc.) will protect from damage resulting from torn off roofs, blown out windows, and other structural damage that compromises the integrity of the building "envelope" that is protecting the collection.

### **BIO-CLIMACTIC DESIGN**

This design strategy naturally cools the vault in summer and naturally heats the vault in winter. The design is specific to every geographic location. Computer controlled dampers and vents adjust interior environmental conditions automatically to maintain the optimal conditions.

### **THERMAL CONTROL**

Through the use of sophisticated wall, roof, & door systems the collections vault can be isolated thermally from the remainder of the facility and from the outside environment. While this strategy can save energy during the normal operation of the building its main benefit is the maintaining of optimal temperature and humidity after a natural disaster where electrical power is not available to run HVAC equipment.

### **NATURAL EMERGENCY POWER**

The loss of electrical power is the main cause of deterioration of environmental conditions of collection areas due to the shutting down of the HVAC systems. Solar power panels, geothermal energy, and electric wind turbines can provide for the electricity needed for minimal environmental controls and are immediately active and not reliant on fuel delivery for traditional diesel electric generators.