

Understanding Resilience

Buildings and communities are subjected to destructive forces from fire, storms, earthquakes, flooding, and even intentional attack. The challenges facing the built environment are evolving with climate change, environmental degradation, and population growth. Architects have a responsibility to design a resilient environment that can more successfully adapt to natural conditions and that can more readily absorb and recover from adverse events. The AIA supports policies, programs, and practices that promote adaptable and resilient buildings and communities.

1.

Hazard: poses a threat to safety

Hazards such as hurricanes, tsunamis, earthquakes, tornadoes, blizzards, drought, and wildfires are responsible for injury, death, and property damage as well as social and economic disruption. These events are no longer a one-off, once in a lifetime event; particularly when we look at the impacts of climate change.

2.

Risk: quantifies hazard threat

Risk defines the likelihood of occurrence and intensity of the hazard. Determining the level of “acceptable risk” is critical to designing for the associated level of building performance. It is important to ask: What is the projected lifespan of the building? What are the building’s critical functional requirements before, during, and after a hazard strikes? And how long is it acceptable for the building to be out of service due to the impacts of a hazard?

3.

Vulnerability: personalizes risk

Vulnerability assesses the capabilities and interdependencies of individuals and communities associated with risk. A resilient building in a vulnerable community isn’t truly resilient. Infrastructure, utilities, food supply and services are all necessary for adequate functionality.

Mitigation: reducing negative impact

Mitigation measures are often developed in accordance with lessons learned from prior incidents. Measures may include zoning and building codes or floodplain buyouts as well as efforts to educate governments, businesses, and the public on measures they can take to reduce loss and injury. Mitigation is most successful when policies and decision-making support appropriate development, land use, site selection, and adoption of model building codes.

Resilience: inherent durability or flexibility

When working within the built environment, it’s important to have foresight: incorporating changing environmental, social, and economic conditions into projects. This requires designs that are tough as well as flexible; providing the ability to not only bounce back, but forward.

Adaptation: accommodating needs throughout service life

Hazards aren’t the only threat. It is critical to acknowledge the changing conditions in the physical, economic and social environment as well. Communities are ultimately successful when they are adaptable to change.