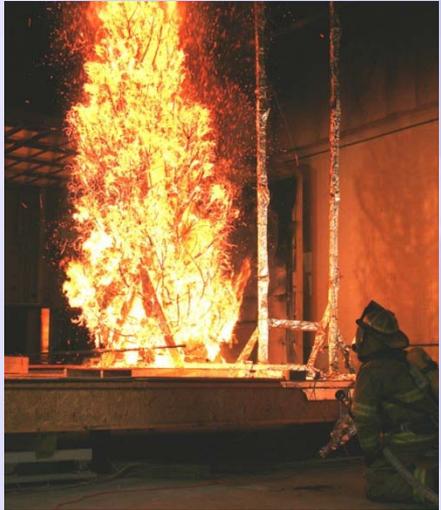




# Standard Methods to Assess the Resilience of the Built Environment



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# Standard Methods to Assess the Resilience of the Built Environment

**Objective:** To develop an enhanced science base and standard methods that can be used to improve existing models and tools to predict losses and evaluate disaster resilience at the community or regional scale.

**Definition:** Disaster resilience is the ability of social units (e.g., organizations/communities) to mitigate risk, contain the effects of disasters, and carry out recovery activities in ways that minimize social disruption, while also minimizing the effects of future disasters. Disaster resilience may be characterized by reduced likelihood of damage to and failure of critical infrastructure, systems, and components; reduced injuries, lives lost, damage, and negative economic and social impacts; and reduced time required to restore a specific system or set of systems to normal or pre-disaster levels of functionality.

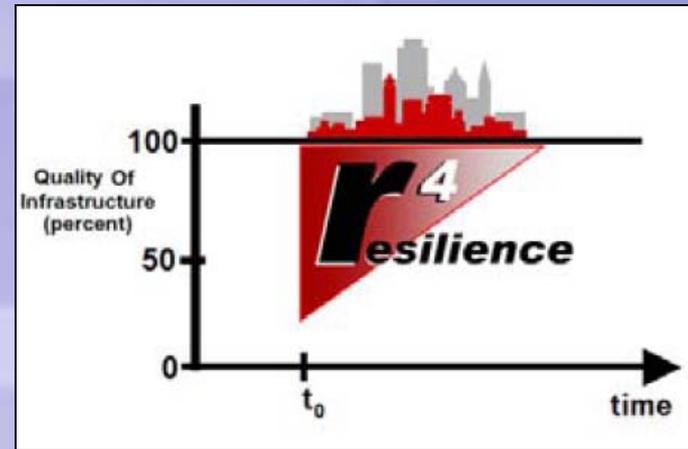
# Risk Mitigation Toolkit



- Parallels Three-Step Protocol (ASTM Standard E 2506)
  - ✓ Risk Assessment
  - ✓ Risk Management
  - ✓ Economic Evaluation
- Web-Enabled Annotated Bibliography
- Over 300 References
  - ✓ Guidance Documents
  - ✓ Software Tools
  - ✓ Databases on Natural and Man-Made Hazards
  - ✓ Clearinghouses and Web Portals

# Disaster Resilient Communities: NIST/MCEER Collaboration

- The Four R's of Resilience (MCEER):
  - ✓ Robustness
  - ✓ Redundancy
  - ✓ Resourcefulness
  - ✓ Rapidity
- Framework for Defining and Measuring Resilience at the Facility and Community Scales
  - ✓ Analyze Asset-Based Approaches for Defining and Measuring Disaster Resilience
  - ✓ Identify Gaps between Asset-Based Approaches and Community-Scale Approaches
  - ✓ Develop Conceptual Framework
  - ✓ Produce Technical Report Synthesizing Findings (NIST Grant Contractor Report)



Source: MCEER's Resilience Framework

# NIST Special Publication (forthcoming)

- Comprehensive Survey of the Literature on Resilience-Related Issues
- Identify and Discuss
  - ✓ Data and Measurement Challenges
  - ✓ Potential Solutions
- Guide to Resources
  - ✓ Journal Articles
  - ✓ Technical Reports
  - ✓ Software Tools
  - ✓ Databases on Natural and Man-Made Hazards
  - ✓ Clearinghouses and Web Portals
  - ✓ Key Terms and Definitions

# Standards Development Activities

- ASTM E06 Performance of Buildings
  - ✓ ASTM E06.81 Subcommittee on Building Economics
  - ✓ Strong Leadership Position
- ASTM E54 Homeland Security
  - ✓ ASTM E54.02 Subcommittee on Emergency Preparedness
  - ✓ Active Participation
- Cross-Referencing Key E06.81 and E54.02 Standards

# Summary: Standard Methods to Assess the Resilience of the Built Environment

- Measuring Community Disaster Resilience
  - ✓ NIST Special Publication
  - ✓ NIST Grant Contractor Report (MCEER)
- Advancing Measurement Science
  - ✓ Promoting Standards Development
  - ✓ ASTM E06.81 and E54.02
- Developing Metrics and Tools