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National Windstorm Impact Reduction Program (NWIRP)

Program Purpose

- Reduce loss of life and property from windstorms through improved understanding of risks and impact
- Shift focus from post-disaster recovery to pre-disaster investments
- Improve windstorm resistance of new & existing buildings

Implementation

- Developed ICC/NSSA 500 storm shelter standard
- International Building Code requirement that K-12 schools and emergency responder facilities in tornado prone region include storm shelters

Impact of Windstorms

- Tornado, Tropical Cyclone/Hurricane, Thunderstorm, Winter storm, etc. resulted in 5000 fatalities, \$1 trillion in economic loss from 1980 to 2017

NGA
NATIONAL GEOSPATIAL ADMINISTRATION

<https://science.house.gov/hearings/calm-before-the-storm-reauthorizing-the-national-windstorm-impact-reduction-program>

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FEMA Windstorm Critical Facility Assessment



Guidelines for Wind Vulnerability Assessments of Existing Critical Facilities

FEMA P-2062 / September 2019



Critical facilities:

- Emergency operations centers
- Healthcare facilities
- Police and fire stations,
- Schools
- Power stations

Target audience:

- Building owners
- Building renovation design professionals
- Agencies developing mitigation plans or awarding grants for mitigating existing buildings

Section 5.2: Exterior Glazing and Shutters

- Risk to glazing is breakage from wind-borne debris from hurricanes or tornadoes



https://www.fema.gov/media-library/assets/documents/183150?utm_source=GD&utm_medium=ces&utm_campaign=windvulnerability

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FEMA Windstorm Critical Facility Assessment: Level 1

Document Review

- Construction project design documents
- Repair & maintenance records
- Performance-related issues
- Research weather records and historical weather data

Conduct a site inspection

- Determine age of building and its windows, skylights and glazed doors
- Document glass, framing and anchoring type and condition
- Locate glazing manufacturer's specification and performance data
- Verify compliance with tests for resistance to wind-borne debris



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FEMA Windstorm Critical Facility Assessment: Level 2

Level 2 Assessment- Field testing, Theoretical and Destructive analysis

- Not required if Level 1 assessment can predict glazing performance or compliance with design criteria
- Recommended for buildings located where basic wind speed is 120 mph or greater
- Recommended if Level 1 assessment assumptions need to be confirmed, or information is incomplete.

Field Air & Water Infiltration tests

- Refer to Industry Standards for test methods

Destructive Analysis

- Remove or partially disassemble typical assemblies
- Analyze anchors and fasteners, and their substrates

Conduct theoretical engineering analysis

- Develop performance criteria for existing assemblies when data is not available
- Predict future performance of installed glazing assemblies



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