

Thirsty **THURSDAY**

QUENCH YOUR THIRST FOR **TECHNICAL KNOW-HOW**

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NGA
NATIONAL GLASS ASSOCIATION

QUENCH YOUR THIRST FOR
TECHNICAL KNOW-HOW

It's Hurricane Season Once Again- *Testing & Certification for Building Products*



José Colón
Director of Sales – N.A.
Intertek

NGA UPCOMING EVENTS

GlassBuild America
Las Vegas, NV
Sept 23-25, 2026

NGA
NATIONAL GLASS ASSOCIATION

SEPT 23-25, 2026 | LAS VEGAS

GlassBuild

A M E R I C A.

THE GLASS, WINDOW & DOOR EXPO

Presented by **NGA**

It's Hurricane Season Once Again-

Testing & Certification for Building Products

Description:

Hurricanes generate immense wind pressure and windborne debris — both threats to the building envelope. When exterior glazing, doors, or wall systems fail on impact, the building envelope breaches, interior pressure spikes, and the structural integrity of the entire building is compromised, putting occupants directly at risk.

This course examines how testing and certification standards for fenestration and building envelope products are used to protect occupant safety in hurricane-prone regions. It will also address practical compliance strategies designers can use to specify code-compliant, life-safety-rated products efficiently and avoid costly approval delays.

Learning Objectives:

- Explain how windborne debris impact causes building envelope breach during hurricanes and describe why impact-resistant glazing and debris-resistant systems are a baseline safety requirement for occupant protection.
- Identify the building codes and standards that govern hurricane-resistant design across coastal U.S. regions and determine which apply based on project location and wind zone.
- Describe the physical testing methods and criteria used to validate hurricane-resistant building products and interpret how these results inform product selection for a project's structural envelope.
- Outline the pathway from product testing through engineering submittal to certification/approval and formulate compliance strategies that reduce approval risk while ensuring life-safety performance is documented and defensible.



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IT'S HURRICANE SEASON ONCE AGAIN

Testing & Certification
for Building Products

Testing & Certification for Building Products – Hurricane Protection

1. Understanding Hurricane Hazards
2. Key Building Codes and Standards
3. Testing Methods
4. Pathways to Approval
5. Compliance Strategies



UNDERSTANDING HURRICANE HAZARDS

IT'S NOT THE PRESSURE THAT BREAKS THE GLASS

IT'S THE DEBRIS!

- Many assume that wind pressure is the ultimate villain.
- The air pressure itself rarely breaks high-quality modern glass.
- The real danger comes from windborne debris.

Not a lot has changed in the past 30 years that I have been in this industry in regard to codes, standards, and test methods for hurricane protection. The tests have really stayed the same.

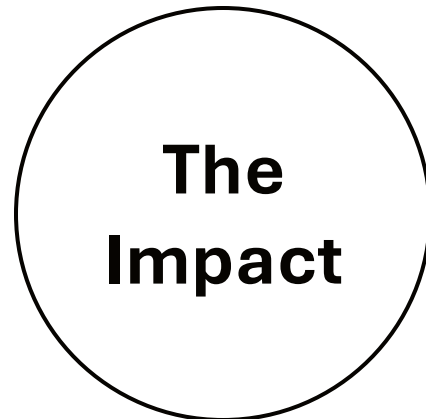


HERE IS HOW IT WORKS

01



02



03



04



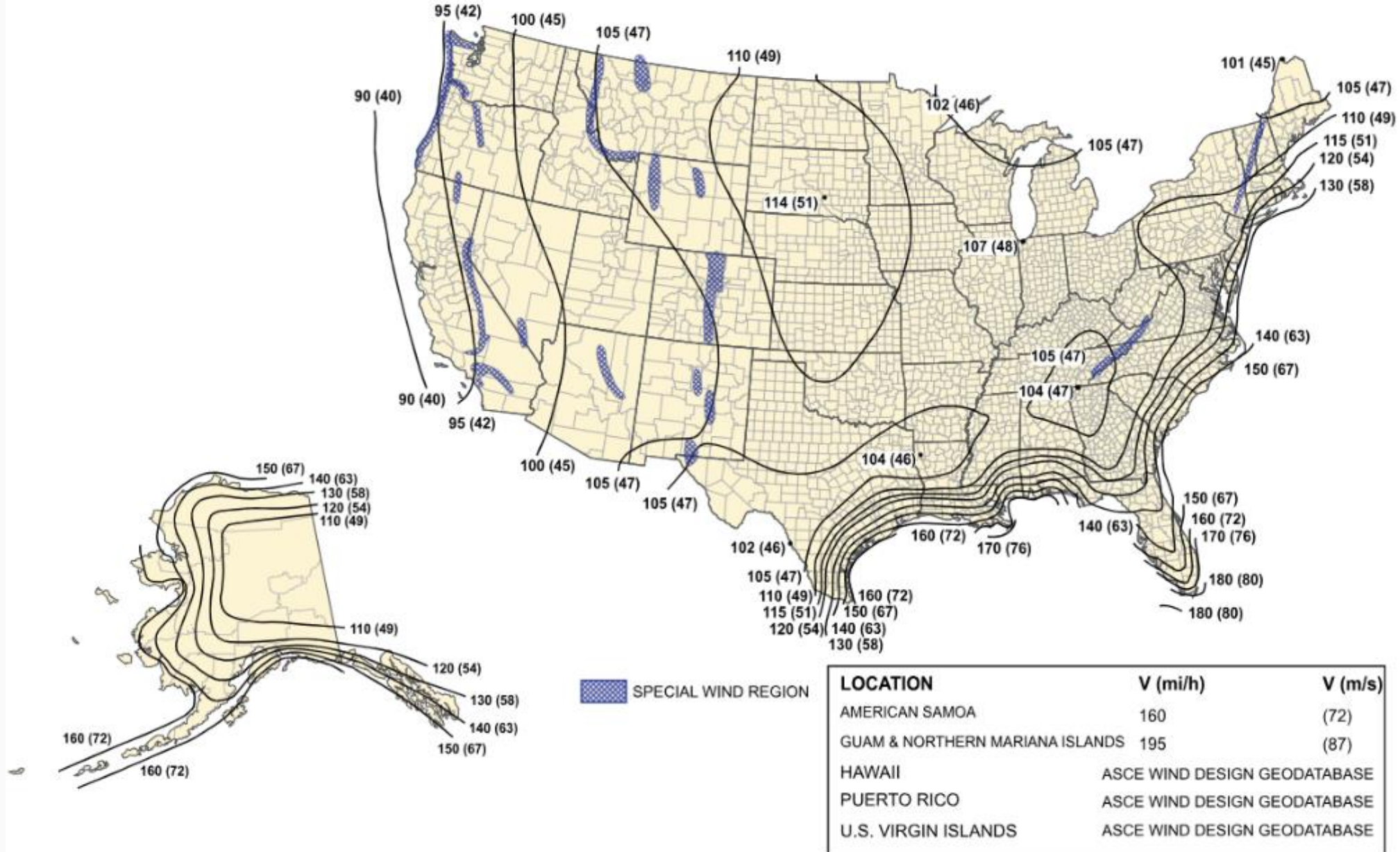
The takeaway for building design?

“Don’t just design for pressure load. Design for impact resistance. Using laminated impact glass and debris resistant systems isn’t an upgrade, it’s a baseline for keeping the entire structural envelope safe”

KEY BUILDING CODES AND STANDARDS



Chapter 16 Structural Design



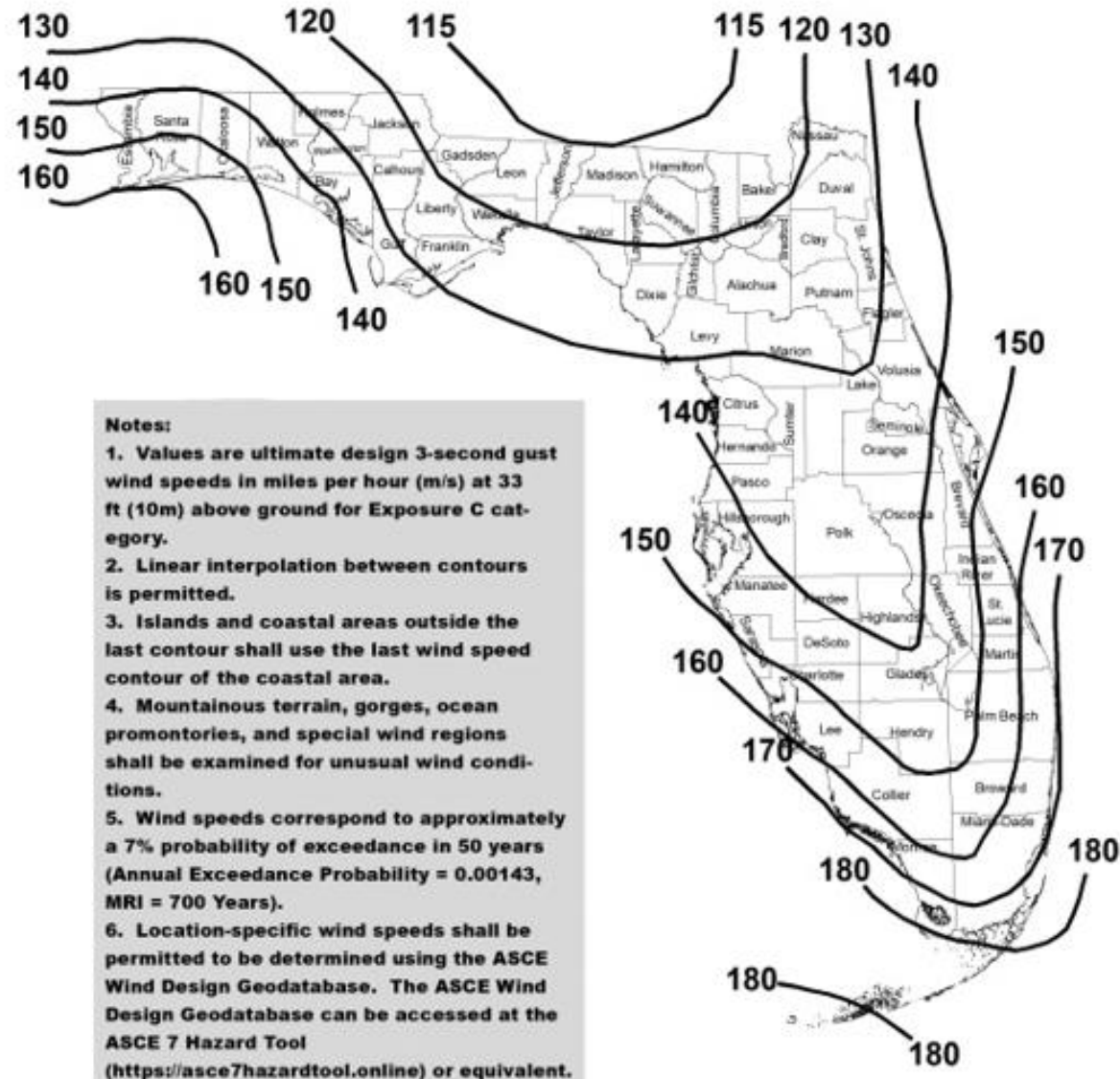


FIGURE 1609.3(1)
ULTIMATE DESIGN WIND SPEEDS, V_{ULT} , FOR RISK CATEGORY II BUILDINGS AND OTHER STRUCTURES

Billion-Dollar Hurricane Events 2024-YTD





- Florida
- Gulf Coast
- Atlantic Coast
 - Even up to Northeast
- The Caribbean



- International Building Code
- International Residential Code
- ASCE-7
- Florida Building Code
- Miami-Dade NOA Requirements
- Texas Department of Insurance



TESTING METHODS



AWSFERIC

- **A**ir Infiltration (ASTM E283/TAS 202)
- **W**ater Infiltration (ASTM E331/TAS 202)
- Uniform **S**taic Load (ASTM E330/TAS 202)
- **F**orced **E**ntry **R**esistance (ASTM F588, F842, AAMA 1304, and TAS 202)
- Missile **I**mpact (TAS 201, ASTM E1886, and E1996)
- Wind Load **C**ycling (TAS 203, ASTM E1886, and E1996)



- The most common windborne debris test methods/standards are TAS 201, ASTM E1886, and ASTM E1996
- TAS 201 – Impact Test Procedures
- ASTM E1886 – Standard Test Method for Performance of Exterior Windows, Curtain Walls, Doors, and Impact Protective Systems Impacted by Missiles and Exposed to Cyclic Pressure Differentials
- ASTM E1996 – Standard Specification for Performance of Exterior Windows, Curtain Walls, Doors, and Impact Protective Systems Impacted by Windborne Debris in Hurricanes
- Large Missile (different missile levels)
 - Systems used below 30-ft. in elevation
 - TAS 201 – 9-lb. 2 x 4 @ 50 ft/sec
 - ASTM – Based on Wind Zone
 - Level B – 2-lb. 2 x 4 @ 50 ft/sec
 - Level C – 4.5-lb. 2 x 4 @ 40 ft/sec
 - Level D – 9-lb. 2 x 4 @ 50 ft/sec
 - Level E – 9-lb. 2 x 4 @ 80 ft/sec (Enhanced Protection)
- Small Missile
 - TAS 201 and ASTM Level A
 - Systems used above 30-ft. in elevation
 - 2 gram steel ball bearings @ 130 ft/sec

MISSILE IMPACT

- Impact Locations
 - Large - Typically 2 impacts per type of infill (lower levels 1 impact)
 - Small – 3 impacts per types of infill
 - Mullions, Horizontals, Rails, etc. could also get impacted
- Pass/Fail Criteria
 - Tear < 5-in. x 1/16-in. or 3-in. sphere
 - No penetration on inner plane for enhanced protection
 - Also after cycling
- Three identical units must be tested, then you can mix and match (test plan)
- These units do not get tested for air and water infiltration.
- After impact it then gets cycled



TAS 203 and ASTM E1886/E1996 Cyclic Load Test

- Every impacted unit needs to be cycled.
- TAS 203 – Criteria for Testing Products Subject to Cyclic Wind Pressure Loading
- ASTM E1886 and E1996
 - 4,500 positive cycles (low to high)
 - 4,500 negative cycles (high to low)
 - Cycle time is about 3 seconds per cycle, test could last 3-4 hours.
 - Failure mode may be deglazing, tearing of glazing, fracture of frame component or fastener failure.
 - Deflection and permanent set are measured
 - Product must be operable after test

PATHWAYS TO APPROVAL



PATHWAYS TO APPROVAL

- Product Types
 - Fenestration products, components, materials, roofing, walls, shutters, protection devices, HVAC enclosures, etc.
- Process
 - Testing by an accredited lab
 - Miami-Dade, FBC, FGIA (per ISO 17025)
 - Prepare Engineering/Submittal package
 - Documentation required for approval
 - Test Reports
 - Engineering Submittal/Evaluation
 - Approval/Certification bodies evaluate results
 - Miami-Dade, FPA, FGIA, TDI, and others
 - Ongoing quality audits required



DEPARTMENT OF REGULATORY AND ECONOMIC RESOURCES (RER)
BOARD AND CODE ADMINISTRATION DIVISION
NOTICE OF ACCEPTANCE (NOA)

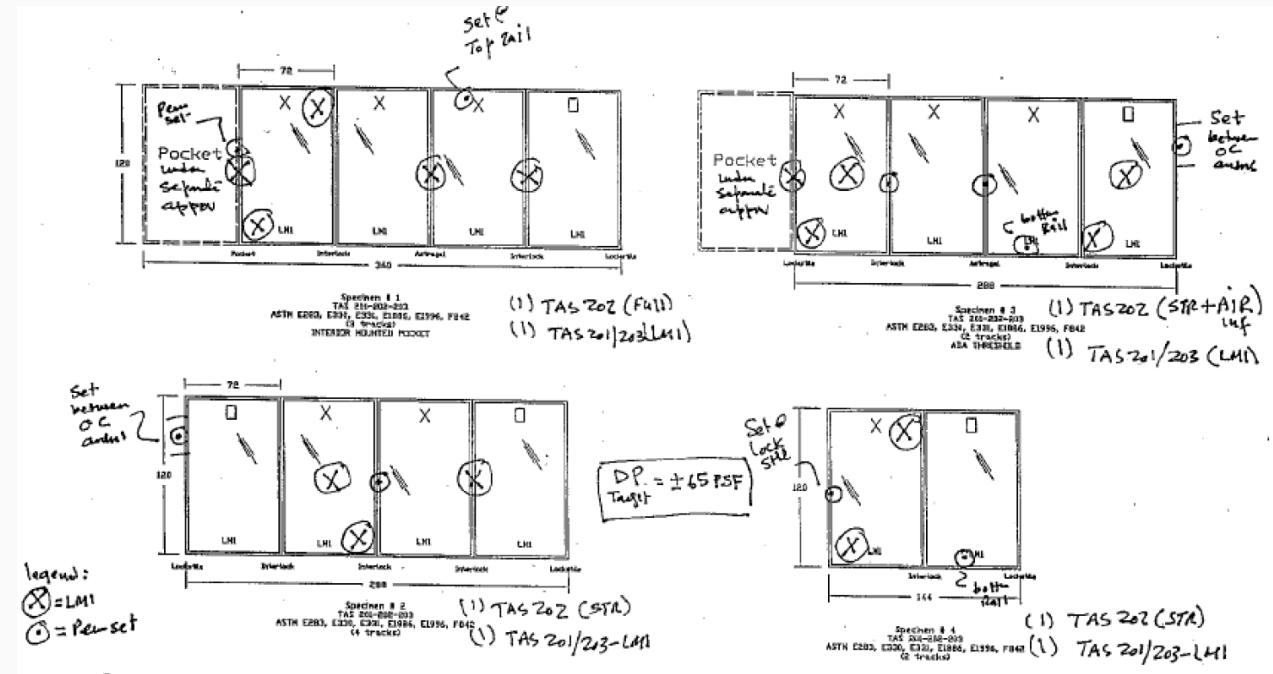
**MIAMI-DADE COUNTY
PRODUCT CONTROL SECTION**
11805 SW 26 Street, Room 208
Miami, Florida 33175-2474
T (786)315-2590 F (786) 31525-99
www.miamidade.gov/economy

COMPLIANCE STRATEGIES



COMPLIANCE STRATEGIES

1. START EARLY – Wish list (size, glass, configurations, glass types, etc.) and Test Lab
2. The goal with a test plan is TO GET YOU THE MOST FOR YOUR APPROVAL WITH THE LEAST AMOUNT OF TESTING
3. Proper installation of the test units for testing. Avoid band-aids. Do it right!
4. Engineering/Submittal packager leads to approval.
5. Quality control for fabrication and installation is key for hurricane resistance.



ONE LAST THING - FLOOD TESTING



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- Identify the building codes and standards that govern hurricane-resistant design across coastal U.S. regions and determine which apply based on project location and wind zone.
- Describe the physical testing methods and criteria used to validate hurricane-resistant building products and interpret how these results inform product selection for a project's structural envelope.
- Outline the pathway from product testing through engineering submittal to certification/approval and formulate compliance strategies that reduce approval risk while ensuring life-safety performance is documented and defensible.



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glass.org/webinars

NGA Upcoming Webinars

New Member “Open House”

*Chart your Journey— meet the team, bring your questions
August 20 at 1:00 pm ET*