Flooding Isn't Just a Coastal Issue: What Buildings Inland Face

A building does not have to be on the coast to be flooded. It can sit near a river, at the bottom of a slope, beside an undersized stormwater system, or in a fast-growing area where pavement has changed how water moves across the site.

While hurricanes and storm surge often get the attention, inland flood risk can come from rising rivers, heavy rainfall, backed-up drainage systems, and runoff moving quickly across developed areas. These risks may not be clear from a project's address alone. Local grading, drainage capacity, nearby waterways, development patterns, and changing rainfall conditions all can affect how water reaches a building.

Site-specific review should be part of flood planning. National flood-risk research has shown that many properties face exposure beyond traditional mapped flood areas, reinforcing the need to evaluate site conditions before design and testing decisions are made.

Inland Flood Risk Is Changing

Coastal flood planning often focuses on storm surge, wind-driven rain, and saltwater exposure. Inland flooding behaves differently. It may come from rivers that rise after days of rain, urban stormwater systems that back up during intense storms, or low-lying sites where water collects faster than it can move away.

"Flood risk is not just a coastal issue. Inland buildings also face exposure from heavy rainfall, rising rivers, runoff, and overwhelmed drainage systems."

Development can add to the problem. Pavement, rooftops, parking lots, and other hard surfaces reduce the ground's ability to absorb water. As more land is developed, rainfall that once soaked into soil can move quickly across roadways, site grades, and building perimeters.

Because inland flooding is shaped by both weather and site conditions, flood planning cannot stop at the property line. It needs to account for how water moves across the site, where it collects, and how it may reach the structure during an extreme weather event.

Where Buildings Can Fall Short

Floodwater often finds the weakest path into a building. That may be a door threshold, window perimeter, foundation joint, wall penetration, loading dock, basement opening, or

transition between two building envelope systems.

Once water enters, the damage can extend well beyond wet finishes. FEMA estimates that 1 inch of water can cause roughly $25,000 in damage to an average-sized home. In commercial buildings, costs can climb quickly because of larger spaces, specialized equipment, inventory, electrical systems, and business interruption.

Floodwater can also create long-term health concerns. Wet materials, trapped moisture, and contaminated water can contribute to mold, poor indoor air quality, and other hazards that continue after visible water has been removed.

Testing the Assembly, Not Just the Product

Flood-resistant design starts with more than water-resistant materials. The assembly has to work as a system. Doors, windows, walls, seals, coatings, barriers, drainage paths, foundations, and transition details all affect performance. A product may test well on its own, but a building can still be vulnerable if water enters where materials connect or where field conditions differ from the original design.

Intertek helps building teams evaluate flood-related performance through services such as:

- Flood protection testing to assess products and systems under simulated flood conditions
- Building envelope testing to evaluate how walls, windows, doors, barriers, and transitions resist water intrusion
- Laboratory performance testing to test materials and assemblies under controlled conditions
- Field testing to verify how installed systems perform in the building
- Mockup testing to identify leaks, weak points, or detailing issues before full installation
- Product certification and third-party verification to support code compliance, documentation, and owner confidence

For inland projects, this review can be especially useful because water behavior varies by site. It can help identify vulnerable locations such as window perimeters, wall intersections, below-grade transitions, and flood barrier connections before flooding exposes problems in the field.

Design for the Site

For inland buildings, flood planning should start with the conditions around the structure. Grading, drainage, local flood history, nearby waterways, stormwater infrastructure, soil conditions, and rainfall patterns all can influence how water moves across a property.

Those findings can guide decisions about waterproofing, drainage, material selection, barrier systems, equipment placement, and building envelope detailing. They can also help determine when product testing, mockups, or field verification should be part of the project plan.

ASCE 24 provides minimum requirements for flood-resistant design and construction in flood hazard areas and is intended to meet or exceed National Flood Insurance Program requirements. Intertek's third-party testing and certification services can help confirm that assemblies have been evaluated against recognized performance expectations instead of relying only on assumptions or component-level data.

Building for Recovery

Inland flooding is not limited to rare, worst-case events. It is already affecting river towns, urban corridors, suburban developments, and commercial sites with aging or undersized drainage infrastructure.

Click here to learn more about Intertek's flood testing and building envelope services and how we help project teams evaluate flood-related performance before water reaches the building.

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