



How to Prepare Your Commercial Roof for Hurricanes & Other High-Wind Events



The roof is a commercial building’s first line of defense against natural hazards such as high winds and heavy rains—like those experienced recently during Hurricanes Harvey and Irma. But while major hurricanes receive a lot of public attention, high-wind events happen much more frequently in all regions of the country. Whenever and wherever high winds blow, the roof is the most vulnerable part of your commercial building. Business owners should do as much as possible to prepare their roofs for such events.

Depending on the slope of the roof and the ease of access, emergency preparations sometimes can be done by the building owner, but in many cases, it makes sense to hire a contractor to make sure the job is done correctly. Safety should always take precedence; roof preparations should be done only if the weather conditions are safe and proper fall precautions are met. The steps here are not a replacement for a regular roof maintenance plan but can help reduce potential loss due to high-wind events that may threaten your building. Even if you are hiring a professional, it’s important to understand the problems identified below and the need for action prior to a storm.

ROOF COVERS

Roofs and roof covers are usually classified as low-sloped or steep-sloped. A fundamental difference between low- and steep-sloped roof covers is that low-sloped roof covers provide an impervious barrier to prevent water buildup from seeping into the building, whereas steep-sloped roof covers act like a raincoat to shed water.

When inspecting your roof, it is important to look at the roof cover for problems that could lead to damage during a severe event.

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Inspect for any loose or missing materials
 For all types of roof covering, loose or missing materials increase vulnerability to high winds and allow for water penetration; identify these areas and have them fixed immediately
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Remove all debris
 Remove items that could become airborne during a high-wind storm, damaging your roof covers, property or other structures



For more information on roof covers, please visit DisasterSafety.org/ibhs-news-releases/protection-from-the-top-the-importance-of-commercial-roof-cover-maintenance-and-repair-3.



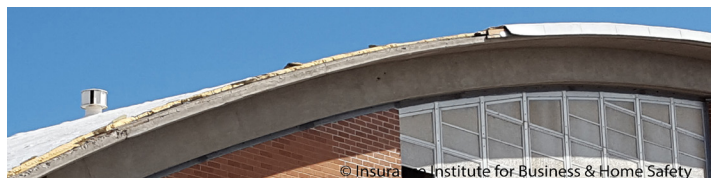
Roof damage caused by Hurricane Matthew in 2016.

PERIMETER AND EQUIPMENT FLASHING

Roof flashing refers to the strips of metal or other material installed around the roof edge where the roof cover meets the wall. It is also installed around objects (such as curbs, roof hatches and roof-mounted equipment) that protrude from the roof to deflect water away from seams and joints.

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Check for loose perimeter flashing
 Loose or ill-fitted flashing greatly increases the potential for roof cover failure and water intrusion during high-wind events
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Inspect for loose flashing around roof-mounted equipment, curbs and roof hatches
 Loose flashing around these areas leads to potential failure of the unit’s structure and water intrusion

For more information on perimeter and equipment flashing, please visit DisasterSafety.org/wp-content/uploads/2017/01/2013_Commercial_Roof-Protection-Begins-at-the-Edge-Flashing_IBHS-member-download.pdf.



Flashing damage in Texas after Hurricane Harvey.

GUTTERS, DOWNSPOUTS AND DRAINS

Gutters, downspouts and roof drains are designed to allow proper water flow during heavy rain, reducing the risk of interior water damage caused by water backing up into the roof.

- Clean roof drainage systems
Remove loose objects on your roof that could potentially clog the drainage, as well as dirt, leaves and other granules from gutters and downspouts; these items can cause blockage in the system during a storm, leading to excess ponding and potential roof failure
- Check for standing water in gutters
Standing water in the gutter may be caused by a blockage in the gutter or a gutter that is not properly sloped to the downspout
- Confirm gutters are anchored
Verify that gutters are anchored by gutter straps designed to resist the high winds associated with hurricanes and other severe storms
- Direct water away from building
To reduce the chance of flooding from ground water, ensure that downspouts funnel water away from the building and do not allow the water to accumulate near the building's foundation

For more information on gutters, downspouts, and drains, please visit DisasterSafety.org/ibhs/commercial-roofs-gutters-drains-and-scuppers.



Gutter damage in Texas after Hurricane Harvey.

ROOF-MOUNTED EQUIPMENT

Roof-mounted equipment is exposed to all weather elements. Corrosion and deterioration are the most common problems and can allow panels or their parts to become airborne during a severe wind event.

- Replace rusted materials
Look for rusted metal panels, screws and metal flashing on curbs, and replace immediately
- Confirm mechanical units are properly attached
Confirm all mechanical units are attached to the deck with the proper hurricane straps, and each unit is secured properly to its curb
- Look for gaps and leaks
Inspect around the unit's connection to the curb it sits on, and check for any visible signs of potential leaks; these can be repaired using various roof sealants and caulks that are readily available
- Check vents and stacks
Check vents and stacks to ensure they are secured properly



Roof-mounted equipment damage in Texas after Hurricane Harvey.

- ✓ Ensure photovoltaic panels are secured properly

IBHS research has shown that ballasted solar panel array systems may slide or lift at wind speeds below design levels; the movement of roof-mounted commercial solar installations have the potential to cause roof damage and generate flying debris during windstorms, such as hurricanes, severe thunderstorms, and straight-line windstorms

- ✓ Inspect satellite dishes

Make sure all satellite dishes are secured tightly to the roof structure

For more information on roof-mounted equipment, please visit DisasterSafety.org/ibhs/hvac-systems-roof-mounted-equipment and DisasterSafety.org/ibhs/commercial-pv-checklist.



Satellite dish damage in Texas after Hurricane Harvey.

ADDITIONAL COMPONENTS

- ✓ Lightning Protection Systems

A lightning protection system that has disconnected metal cables or aerials is no longer capable of providing the intended protection for the building and its occupants, and if the system is not properly attached to the roof, it can become windborne, causing damage to other structures or roof components during a high-wind event; check to see if the rods and cables are secure and repair as needed

- ✓ Roof Hatches

Check roof hatches for any loose materials or screws, and make sure the roof hatch is closed and locked

- ✓ Skylights

Inspect skylights for cracks and leaks; also inspect securements to the curb and address any rotting wood in the curb

Follow these guidelines to strengthen your roof and reduce damage from hurricanes and other high winds. Additionally, use the steps outlined in [EZ-PREP™](#)—IBHS' severe weather emergency preparedness and response planning toolkit—to make sure your whole business is ready to stand up to Mother Nature.



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Download the free EZ-PREP™ toolkit at DisasterSafety.org/ibhs-business-protection/ez-prep-emergency-response-planning.

IBHS is a nonprofit applied research and communications organization dedicated to reducing property losses due to natural and man-made disasters by building stronger, more resilient communities.

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