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The Calm Before the Storm


Construction Site
Hurricane Protection

Allianz 



With peak wind speeds that exceed 186 mph, hurricanes can cause catastrophic damage to structures under construction.

With correct planning, you can protect your construction site and mitigate potential damage from this extreme-weather event.



Engineering and construction firms that operate in the “hurricane belt” are acutely aware of the hazards that hurricanes pose to construction sites, with their incomplete structures; expensive machinery and equipment; materials and finishes that are easily damaged by water; flood-prone excavations; and building materials such as lumber, sheathing and piping that can quickly become projectiles in high winds. However, contractors often make the mistake of waiting to “batten down the hatches” until a hurricane is imminent, with inadequate time to protect the project.

Enclosed in this information kit are documents to aid in preparing a Hurricane Action Plan that can help you protect your construction site from this storm event.

These materials were compiled by Allianz Risk Consulting (ARC) risk specialists based on extensive years of consultation with construction and engineering firms that operate in hurricane-prone regions. This information kit provides general information and recommendations that may apply to many different situations. Any recommendations described in this information kit are not intended to be specific to your unique situation. Consult with your staff and specialists to determine how and whether the information in this information kit might guide you in developing specific plans and procedures for your operations. This information kit does not substitute for legal advice, which should come from your own counsel.

Hurricane Action Planning Kit Materials Include:

- Pre-construction Checklist
- Tropical Storm Checklist
- Hurricane Watch Checklist
- Hurricane Warning Checklist
- Hurricane Recovery Checklist
- Hurricane Response Team Form
- Hurricane Recovery Team Form
- Typical Hurricane Preparation Materials and Equipment
- Tropical Storm Action Items Table
- Hurricane Watch Action Items Table
- Hurricane Warning Action Items Table
- Hurricane Recovery Action Items Table
- Typical Recovery Operation Supplies

Hurricane Preparedness for the Construction Site

A Contractor's Loss Prevention Guide

Construction sites are extremely susceptible to losses when exposed to hurricanes. Hurricanes are tropical cyclones, occurring in the North Atlantic Ocean or the Northeast Pacific Ocean, east of the International Dateline. Tropical cyclones, depending on size of the storm, can have peak wind speeds that exceed 186 mph, and they can be very destructive to completed buildings and even more so to structures under construction.

Structures under construction often have incomplete or temporarily supported weakened structural systems, unsecured building envelopes, loose materials and debris, temporary structures and susceptible construction equipment. Construction debris can become projectiles, damaging building components and structures. Windows, doors, roofs and building openings, even if secured, can be damaged and allow water to infiltrate the building envelope. Partially secured walls, shored floors and structures under construction may be at high risk for collapse from wind loadings. A storm surge can flood and damage low-lying structures, foundations and retaining walls. Cranes and other equipment can collapse and/or be damaged by high winds or flying debris.



With proper planning, contractors can minimize the impact and expedite project recovery from this extreme weather event. Hurricane preparedness should be considered if the construction site is located in a hurricane-prone area, as indicated in the map included in this packet, with construction ongoing between the months of June through November in the Atlantic, Caribbean and Gulf of Mexico region; May to November in the Eastern Pacific region; and June to November in the Central Pacific Basin.

If the site is located in these risk-prone areas, a Hurricane Action Plan should be assembled. It is critical that a Hurricane Action Plan is created during the site planning stages of the project and not left until news of an impending storm. If the plan is to be useful, project-specific thought and consideration are required.

This document is a tool to assist in the development of a project-specific Hurricane Action Plan.



Hurricane Action Plans should consider the following:

Phase I

Pre-Construction
Planning Prior to
Hurricane

Phase II

Tropical Storm/
Potential Hurricane
(storm is named)

Phase III

Hurricane Watch
(typically 48
hours before
hurricane makes
landfall)

Phase VI

Hurricane Warning
(24 to 36 hours
before hurricane
makes landfall)

Phase V

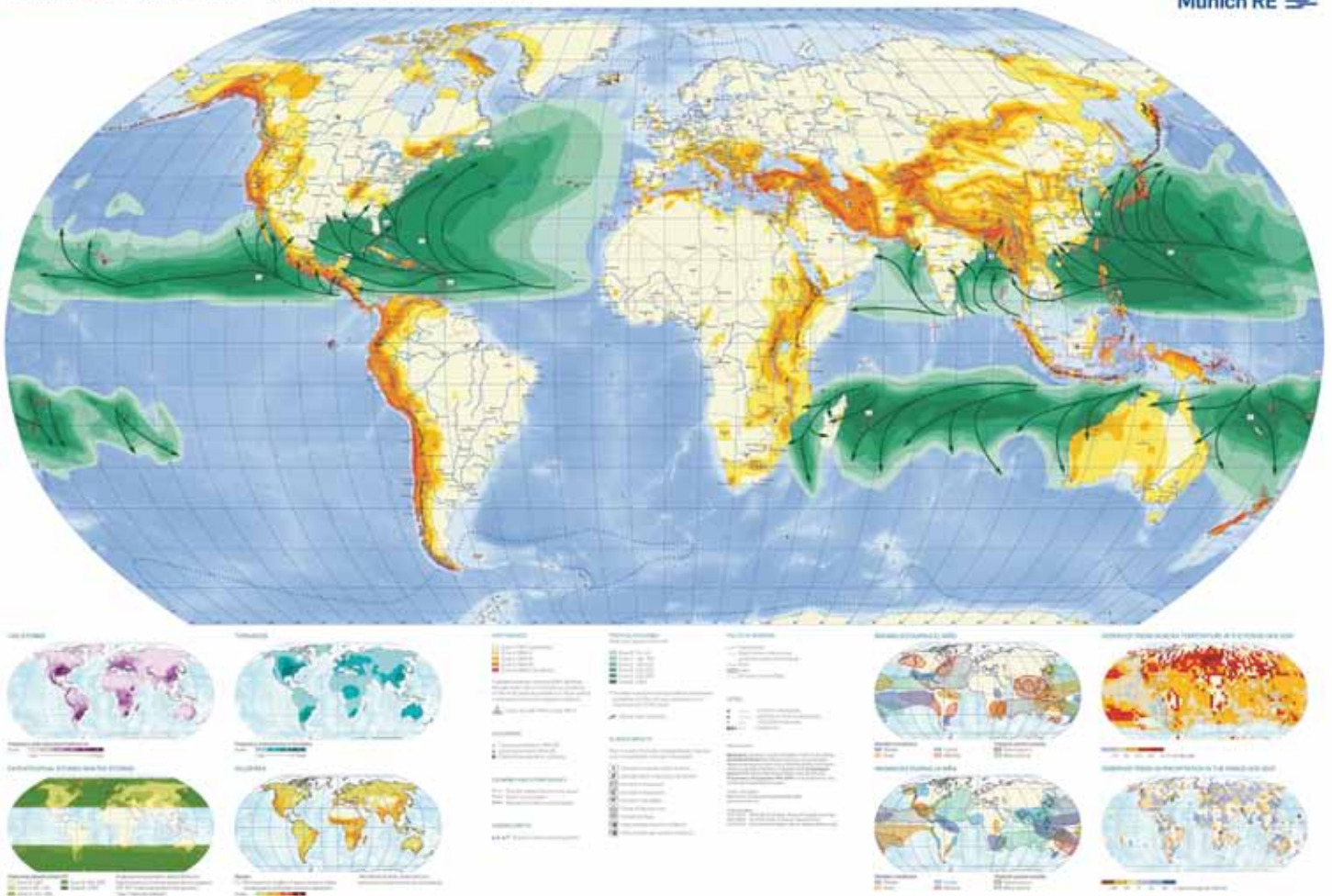
Hurricane Recovery
(following a
hurricane)

Each of these phases should be addressed and incorporated into the Hurricane Action Plan. Be aware of the fact that evacuation orders may require the staff to vacate the site well in advance of the storm. Plan ahead if this is a possibility for your project location.

Considerations that should be addressed in each phase of the best Hurricane Action Plans are detailed in this document. This document does not include every project-specific consideration that should be included in a contractor's Hurricane Action Plan and is, instead, a collection of best practices. The user should feel free to enhance their plan further according to local needs.

NATHAN WORLD MAP OF NATURAL HAZARDS

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Definitions*

The following definitions are critical to understanding hurricanes and their potential impact on construction projects:

Hurricane Season

The portion of the year having a relatively high incidence of hurricanes. The hurricane season in the Atlantic, Caribbean and Gulf of Mexico runs from June 1 to November 30. The hurricane season in the Eastern Pacific basin runs from May 15 to November 30. The hurricane season in the Central Pacific basin runs from June 1 to November 30.

Hurricane / Typhoon

A tropical cyclone in which the maximum sustained surface wind (using the U.S. 1-minute average) is 74 mph (64 knots) or more. The term "hurricane" is used for Northern Hemisphere tropical cyclones east of the International Dateline to the Greenwich Meridian. The term "typhoon" is used for Pacific tropical cyclones north of the Equator and west of the International Dateline.

Hurricane Warning

An announcement that hurricane conditions (sustained winds of 74 mph or higher) are expected somewhere within the specified coastal area. Because hurricane preparedness activities become difficult once winds reach tropical storm force, the hurricane warning is issued less than 24 to 36 hours in advance of the anticipated onset of tropical storm-force winds.

Hurricane Watch

An announcement that hurricane conditions (sustained winds of 74 mph or higher) are possible within the specified coastal area. Because hurricane preparedness activities become difficult once winds reach tropical storm force, the hurricane watch is issued 48 hours in advance of the anticipated onset of tropical storm-force winds.





Definitions* continued

Major Hurricane

A hurricane that is classified as Category 3 or higher.

Potential Hurricane

When a storm is named and becomes a Tropical Storm (as defined for the purposes of this guide).

Storm Surge

An abnormal rise in sea level accompanying a hurricane or other intense storm, and whose height is the difference between the observed level of the sea surface and the level that would have occurred in the absence of the cyclone. Storm surge is usually estimated by subtracting the normal or astronomic high tide from the observed storm tide.

Tropical Depression

An organized system of persistent clouds and thunderstorms with a closed, low-level circulation and maximum sustained winds of 38 mph (33 knots) or less.

Tropical Storm

An organized system of strong thunderstorms with a well-defined circulation and maximum sustained winds of 39 to 73 mph (34 to 63 knots).

* Source is the National Oceanic and Atmospheric Administration (NOAA) National Hurricane Center

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Activate
prior to
Construction

Pre-Construction Checklist

Hurricane Action Plan



Key personnel should maintain hard copies of all critical lists (such as telephone numbers) and the Hurricane Action Plan in the event that electronic files cannot be accessed due to loss of electrical power. Like all good disaster recovery plans, the documents should not be solely stored on the project site, which could be impacted by the event and therefore be inaccessible to key personnel.

- Establish a Person-in-Charge who will take control during an emergency, initiate the established plan and assign emergency responsibility roles. This person should also be responsible for ensuring all roles are filled and team members are trained regularly (typically the PM or assistant PM).
- Develop two teams: a Hurricane Response team (for the period before a storm event) and a Hurricane Recovery team (for the period following a storm event). **Hurricane Response/Recovery Team Forms*** will assist in the identification of the team members.
- Maintain an emergency phone list for all hurricane response and recovery personnel and key subcontractors. The phone list should be kept current and should include both work-related and personal home numbers, cell phone numbers and e-mail addresses. This information should be included in the **Hurricane Response/Recovery Team Forms***.
- Establish back-up recovery role personnel in the event that members of the response or recovery teams are not able to return to work promptly because they have been personally impacted by the storm.
- Create a flow chart indicating the order of who is to be called.
- During a weekly meeting, discuss the Hurricane Action Plan and the team members' roles and responsibilities.
- Establish an off-site "war room" and emergency communications control center in the event that an evacuation is required. This can be as simple as a hotel room, home office or a corporate office location. Determine procedures for communication and a rally point, as well as when a return to the site is expected.
- Monitor the weather during the hurricane season in potentially affected areas. The Person-in-Charge will assign responsibility for monitoring the weather and tracking the storm once it reaches tropical storm strength and becomes a "named storm." The National Oceanic Atmospheric Administration (NOAA.com) website can be used for this purpose.
- If radios are used for onsite communication, establish dedicated communication channels...for example, Channel 1 – Safety, Channel 2 – General Contractor, Channel 3 – Subcontractor A, Channel 4 – Subcontractor B, etc.
- A best practice for contractors is to establish a company website or a toll-free phone number to provide information to employees in the event of hurricanes or any catastrophe.

Pre-Construction Checklist

- Make a list of names, addresses and phone numbers for vendors and contractors who can provide recovery services or supplies.
- Think of possible project-specific scenarios and specific courses of action for each.
- Make provisions for salvage and cleanup operations, particularly for vital or essential items.
- Make provisions for security measures.
- Develop an inspection and testing schedule for emergency equipment (generators, pumps, fuel, etc).
- Establish treaties with contractors, subcontractors and suppliers. The treaty can offer priority assistance, labor and supplies in the event of a hurricane or other catastrophe. Additionally, because hurricanes are typically localized, treaties between a contractor's peers (competitors) can be developed in which, after a hurricane event, the impacted contractor is assisted by fellow contractors with resources, labor and expertise. These treaties often have no cost and can provide contractors with assurances of greatly expedited recovery following a catastrophic event.
- Establish contracts prior to hurricane season with pre-negotiated rates, ensuring fair pricing and greatly expedited recovery.
- Be aware of your location (i.e. proximity to ocean, lakes and rivers; adjacent properties; geographic elevation, etc.) and how transportation problems may slow or prevent evacuation.
- Determine project-specific measures required to minimize damage during a hurricane. If the facility is in a flood area, consider measures that would be taken to mitigate losses during construction.
- Develop a list of, and source for, hurricane preparation materials and equipment. A List of **Hurricane Preparation Materials and Equipment*** can be helpful; revise as needed.
- Have an inventory of supplies and materials required for recovery operations. A List of **Recovery Operation Supplies*** can be helpful; revise as needed. Note that the recovery team may need to be entirely self-sufficient for an extended period of time.
- Consider performing pre-planning with local authorities.
- Establish an emergency evacuation plan to ensure safe, complete and orderly evacuation.
- Establish procedures to follow in the event of exposed energized electrical wires, flammable or hazardous liquid leaks, leaking gas, structural damage and utility damage.

* Included in this packet

Notes



Tropical Storm Checklist

Hurricane Action Plan

Activate when a tropical storm is named with winds of 39 mph or higher



Weather forecasts are not 100 percent accurate. Therefore, it is best to take precautions even if the construction project is not directly in the projected path of the tropical storm.

- Review your Hurricane Action Plan and update if required.
- Activate the individual responsible for tracking the storm and advise the Person-in-Charge.
- Ensure that the hurricane response and recovery team information is up to date and accurate. The Person-in-Charge should have an updated, printed copy of the list for safe-keeping.
- Conduct a project meeting reviewing the members of the hurricane response/recovery team and their responsibilities. Review and confirm action items with the individuals responsible.
- Ensure that all hurricane planning items have been addressed.
- Monitor material deliveries and begin to consider the impact of material deliveries and the potential of stopping deliveries (especially for non-critical deliveries).
- Determine material requirements (plywood, netting, banding, plastic sheeting, trailer anchors and tie-downs, concrete anchor screws) for protecting the site in its current state of completion and determine the material source and availability.
- Prepare to secure the site (protect/secure materials and equipment, cover exterior openings, complete structures, brace equipment, clean site, etc).
- Review what off-site company resources are available to assist with recovery.
- Contact the corporate safety director, human resources and information technology personnel, as needed.
- Consider updating the project's Critical Path Method (CPM) Schedule Logic Diagram. This will be useful for reflecting the project's pre-storm status and later establishing delays caused by the storm, damages and subsequent repairs.

This article provides general information and recommendations that may apply to many different situations. Any recommendations described in this article are not intended to be specific to your unique situation. Consult with your staff and specialists to determine how and whether the information in this article might guide you in developing specific plans or procedures for your operations. This article does not substitute for legal advice, which should come from your own counsel.

Hurricane Watch Checklist

Hurricane Action Plan

Activate less than 48 hours in advance of a storm with anticipated sustained winds of 74 mph or higher



- Schedule a meeting with staff to review the Hurricane Action Plan, contingency plans and emergency roles and responsibilities and provide contact information.
- Have the storm tracker monitor the weather for changes and advise the Person-in-Charge every four hours.
- Stop all material deliveries.
- Have subcontractors move any uninstalled materials to a safe location.
- Discontinue work on projects that would be vulnerable to damage by the event.
- Complete work if it would minimize the impact of a storm event (for example, complete the roof, install doors, etc.).
- Prepare to protect materials or equipment that cannot be moved.
- Obtain materials to cover exterior openings (such as doors, windows, roof openings, etc.).
- Obtain netting, banding materials and self-tapping concrete anchoring screws to secure and anchor materials that cannot be removed or securely stored.
- Close all doors and windows. Remember that they may be left open unintentionally by employees on site.
- Remove, secure, isolate or neutralize chemicals to prevent their release or their reaction together if disturbed.
- Ensure that construction trailers and shipping containers/storage boxes are properly anchored and tied down. If anchors are not available, use concrete filled drums with embedded reinforcing steel loops and tether at least at three locations for each trailer or storage container.
- Remove loose jobsite materials and debris that could become projectiles, and clean the jobsite daily.
- Have garbage in dumpsters and other containers consolidated and properly disposed. Prepare to remove dumpsters/garbage containers. If it's not possible to remove the containers, secure them with nets to prevent debris from becoming airborne.
- Move important documents and records to a safe location.
- To minimize damage, finish work on partially completed structures. For example, complete sheathing nailing to code requirements; secure decking; install hurricane straps and required tie-straps; complete permanent connections to the extent possible; repair roof deficiencies (such as flashing, drains, gutters, scuppers, penetrations), etc.

Hurricane Watch Checklist

- If completion of structures is not possible or new construction is not fully strengthened, install and fortify temporary bracing to the greatest extent possible. Brace/secure all roof-mounted equipment or any other equipment prone to movement by high winds.
- Band and bundle building materials that cannot be removed.
- Move materials that cannot be relocated or secured otherwise to shipping containers/storage boxes. Cover all materials that cannot be relocated and elevate them to at least 4 inches above the floor to reduce water damage exposure.
- Remove and secure formwork if it cannot be filled with concrete. In some situations, it may be possible to secure formwork using materials such as heavy structural steel components and banding.
- Consider preparations to prevent water damage to the structure, such as grading, sandbagging materials, ensuring roof is clear of debris that could block scuppers, arranging for dewatering pumps and generators if required, etc.
- If emergency personnel are remaining on site during the event, ensure that adequate supplies for their well-being and protection are available and that safety precautions have been taken.
- A design engineer should examine the structures and advise to minimize damage potential.
- Remove scaffolds when possible. If removal of scaffolds is not feasible, remove and secure all boards from scaffolds. Secure all mobile scaffolds to columns or place in shipping (e.g., Conex) boxes.
- Keep evacuation routes open for all vehicles.
- Fully charge all devices and batteries.
- Consider flooding cofferdams, if prudent, to minimize the forces acting on them, such as wind and storm surge.



Notes

Activate less than 24 to 36 hours in advance of a storm with anticipated sustained winds of 74 mph or higher

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Hurricane Warning Checklist

Hurricane Action Plan



- Secure all exterior building openings, doors and windows. Consider temporary bracing for large doors which are not designed for high wind loads.
- Install protective measures to minimize the infiltration of water into the building and excavations (e.g., grading, berms, sandbags, pipe caps, etc.). If necessary, protect trailers to minimize the infiltration of water.
- Deploy portable de-watering equipment. Note that municipal power may not be available.
- Address housekeeping items; Remove all debris from site and roof; Secure materials that cannot be moved by placing them in interior building locations or bind them to secure structures; Remove or safely store all hazardous and flammable materials; Make sure that all roof drains are operational, roof caps/strainers are in place and scuppers are free of obstructions.
- Back up all important critical computer data. Store data backup offsite.
- Unplug and move computers to as high an elevation as possible, in the middle of a room and away from windows.
- For items that cannot be relocated, cover all office equipment (computers, copiers, phones, filing cabinets, etc) with plastic tarps and bags; move them to the most secure area possible.
- Move project drawings and specifications to a protected and secure location on- or off-site.
- De-energize power (especially temporary electrical service) at the circuit breakers, as close to the main power breaker as possible. Unplug all electrical equipment.
- Shut down all gas lines as far back to the main as is feasible to prevent a gas release or a fire.
- Shut down all water lines **that are not used for fire protection** as far back to the supply point as is feasible.
- Consider having cash available for recovery operations. If telephone and power are out, cash may be the only accepted form of payment. Cash may be required for food, materials, fuel, paying contractors or even paying employees.
- Secure/protect fuel tanks and drums to prevent movement and damage.
- Remove/secure portable toilets. Toilets can be banded together, anchored to the foundation, secured to walls or weighted down with concrete blocks or sand.
- All construction equipment mats should be tied together and anchored.
- All cranes should be removed from barges.

Hurricane Warning Checklist

- Flood cofferdams, if determined to be the best option for damage reduction.
- Implement building code requirements governing hurricane and high-wind preparations for cranes and hoisting equipment. Some municipalities establish fines and penalties for not following hurricane and high-wind-event precautions for hoisting equipment.
- Contact the crane subcontractor regarding preparing the crane for adverse weather.
- Ensure hoisting equipment abides by all manufacturers' recommendations, including the placement and removal of advertisement banners and the use and/or removal of rigging.
- Remove portable equipment from the jobsite, or store it in shipping containers. For large portable equipment welding machines, compressors, etc., that cannot be placed in shipping containers or stored inside a structure, band the equipment together and protect/secure it as well as possible.
- All crane booms, buckets and blades should be lowered to the ground.
- Hydraulic cranes should have booms retracted and stored.
- Any counterweighted hoist should have the counterweight locked below the top tie-in.
- Inspect all crane counterweights and crane components to ensure they have the greatest likelihood to survive the storm.
- Generally, tower cranes should be allowed to weathervane (move with the wind to minimize the forces acting on the crane).
- Lubricate the tower crane turntable prior to the event.
- All power at the base of the tower should be disconnected.
- All rigging must be removed from the hoist block.
- Backfill excavations if feasible.
- Fuel all vehicles and emergency equipment (such as generators).
- Remove fence screening, signs, banners, etc.
- Secure essential traffic control devices using anchors, sandbags and "tie downs." Remove the devices only if their absence will not create unsafe driving conditions. Collect and remove non-essential barricades.
- Ensure fire protection systems are operational to the extent possible and that adequate fire extinguishers are available.
- Construction equipment should be moved to a location as far as possible from trees, structures or electrical wires, which could fall on them during a storm. Equipment, with brakes set, should also be relocated to as high an elevation as possible to reduce the likelihood of water damage and improve future access to equipment.
- In addition to monitoring the progress of the storm via the Internet, the use of lightning detection equipment can provide valuable information regarding the impending storm. It is considered prudent to take shelter in the interior of a building (taking shelter in construction field trailers should be a last resort) when lightning detectors indicate that lightning is within 8 miles of the site. Work should be immediately stopped in the event of lightning.
- Protect incomplete underground utilities, processes and drainage piping from flotation and the infiltration of sand and silt.
- Fill water coolers and place inside gang boxes for additional weight and for the water needs of recovery personnel. Water may not be available following a storm or municipal water may be contaminated.
- Make de-watering arrangements for meter pits and other in-ground vaults that contain electronic equipment.
- Inform employees and subcontractors about whom to contact regarding a resumption of site activities.



Hurricane Warning Checklist

- If employees are to remain onsite to operate pumps or minimize damage, safety is critical. Consideration must be given to the security of the shelter taken during the storm from a structural, flooding, storm-surge and projectile-impact standpoint. Consult a structural engineer to verify that the shelter protection is adequate. Depending on the severity of the storm, onsite personnel must be self sufficient (potentially for several weeks) and will require provisions. The choice to remain during the storm, if absolutely necessary, must be entirely voluntary, well considered and not taken lightly.
- Make a video/photographic record of the jobsite and surrounding properties to document the project condition and status prior to the storm.
- Establish a meeting place, if possible, for key recovery members.
- Inform construction personnel regarding when to leave the project site and how to determine when to return.
- If treaties or agreements exist for recovery assistance by Contractors, contact them to plan recovery efforts.
- If authorities require evacuation, immediately vacate the site.
- Once the site is secure, instruct subcontractors and employees to vacate the jobsite and not to return until the danger has passed.

Notes



Activate after
the storm

Hurricane Recovery Checklist

Hurricane Action Plan



- Despite the disruptive nature of the event, before making repairs, ensure that all safety procedures have been implemented including the permitting of Hot Work, fall protection, lockout tag-out, smoking prohibitions (safe areas), etc.
- Always ensure that a safety manager is present prior to beginning a hurricane recovery operation.
- Determine if the site is safe to enter and what hazards are present. Also, determine what trades and personnel should return to the site.
- Determine what medical facilities are currently handling emergencies in the event of an injury. Some facilities may have been evacuated or heavily damaged in the storm.
- Recovery personnel must be equipped with appropriate personal protective equipment (PPE). This should include, but not be limited to, hardhats, steel-toed boots, eye protection, gloves, respirators, chemical protective suits, etc. (Enforce all typical work safety practices).
- Recovery workers should have proper immunization if they are working in areas where there is a potential for disease exposure. Contact your local medical provider or the Centers for Disease Control (CDC) for assistance.
- Maintain proper first aid equipment and clean water to aid in disinfection.
- Workers should take extra care when walking through standing water, as it can mask hidden hazards, such as depressions, sharp debris, tripping hazards, etc., and can contain chemicals and harbor disease.
- If you or your employees encounter hazardous materials, stay upwind, isolate and secure/guard the area, and notify local experts of the incident for proper remediation.
- Have insecticides to protect against insects, which can carry disease.
- Repair roads, as needed, to allow unencumbered site access.
- Evaluate structures before entering (if required, utilize a structural engineer). Repairs may be required to make the structure safe prior to entry.
- Use caution when removing damaged building components so as not to further compromise and possibly collapse the structure.
- Use caution regarding protruding materials that could injure employees.
- Barricade and clearly identify unsafe areas to prevent entry. If a barricade is not feasible, post a guard to prevent unauthorized entry until the hazard is eliminated.

Hurricane Recovery Checklist

- If tower cranes, hoists or scaffolds have been damaged, notify the appropriate subcontractors and engineers.
- Investigate the site for dangerous conditions, such as collapse, live wires, leaking gas, piping damage or situations that could start a fire.
- Be aware of displaced wildlife that can be a hazard to personnel following a storm event and carry disease.
- Documenting damage (before cleanup and repair):
 - Carefully inspect the construction project and determine the extent of storm-related damage.
 - Document damages in writing, using photos or videos if necessary. Involve subcontractors, owner's representatives, design professionals, electricians and other staff, as required.
 - Notify the owner and insurer before making repairs. However, make immediate reasonable repairs to minimize damage or prevent personal injury.
 - Submit damage reports to risk management personnel.
 - Consider the duration of repairs and their impact on the schedule critical path.
- Establish repair priorities. Identify critical hazards that must be abated prior to allowing the entire construction staff to resume construction.
- Repair damage to fire protection systems as quickly as possible and maintain permitting of hot work, smoking prohibitions and a clean project site to prevent potential fire.
- Salvage and protect the structure by securing breaches in the roof (tarp if needed) and building envelope (cover broken windows and exterior building damage). Remove materials from and/or pump out water as required. Clean roof drains and debris to prevent drainage problems.
- Have each Subcontractor prepare a damage assessment report in writing within 24-28 hours of returning to site and providing these reports to the General Contractor.
- Use care as electrical devices and conductors may be energized. Have qualified electricians inspect all electrical systems and ensure that they are safe to be energized.
- If power lines are down, consider them as energized "live" until verified to be de-energized. Beware of electrical lines in standing water.
- Extension cords should be in good condition and should not be submerged in standing water.
- Contact your insurance claims office if necessary.
- When operating fuel powered equipment such as, generators, pumps, compressors, etc, ensure that proper ventilation is provided.
- Remove water from structures as quickly as possible to minimize the potential for mold and fungus growth.
- Restore HVAC System to maintain or restore building interior environment.



Hurricane Response Team Form

Hurricane Action Plan

1 Name _____ Work Title _____
Hurricane Role _____
Residence Location _____
Cell Phone _____ Residence Phone _____
Personal email _____

2 Name _____ Work Title _____
Hurricane Role _____
Residence Location _____
Cell Phone _____ Residence Phone _____
Personal email _____

3 Name _____ Work Title _____
Hurricane Role _____
Residence Location _____
Cell Phone _____ Residence Phone _____
Personal email _____

Hurricane Response Team Form

Backup Personnel

1 Name _____ Work Title _____

Hurricane Role _____

Residence Location _____

Cell Phone _____ Residence Phone _____

Personal email _____

2 Name _____ Work Title _____

Hurricane Role _____

Residence Location _____

Cell Phone _____ Residence Phone _____

Personal email _____

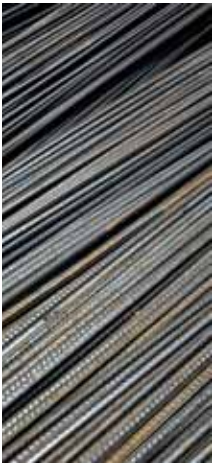
3 Name _____ Work Title _____

Hurricane Role _____

Residence Location _____

Cell Phone _____ Residence Phone _____

Personal email _____



Hurricane Recovery Team Form

Hurricane Action Plan

1 Name _____ Work Title _____

Hurricane Role _____

Residence Location _____

Cell Phone _____ Residence Phone _____

Personal email _____

2 Name _____ Work Title _____

Hurricane Role _____

Residence Location _____

Cell Phone _____ Residence Phone _____

Personal email _____

3 Name _____ Work Title _____

Hurricane Role _____

Residence Location _____

Cell Phone _____ Residence Phone _____

Personal email _____

Hurricane Recovery Team Form

Backup Personnel

1 Name _____ Work Title _____
Hurricane Role _____
Residence Location _____
Cell Phone _____ Residence Phone _____
Personal email _____

2 Name _____ Work Title _____
Hurricane Role _____
Residence Location _____
Cell Phone _____ Residence Phone _____
Personal email _____

3 Name _____ Work Title _____
Hurricane Role _____
Residence Location _____
Cell Phone _____ Residence Phone _____
Personal email _____



Typical Hurricane Preparation Materials and Equipment

Hurricane Action Plan

Hurricane Preparation Materials and Equipment* Source

Sand bags	
Generators	
Fuel	
Water	
Plywood (no less than 5/8" exterior rated)	
Shoring and bracing to provide support to incomplete structures	
Pumps	
Rope	

*These are only example materials and equipment and should be revised for each project.



Typical Hurricane Preparation Materials and Equipment

Hurricane Preparation Materials and Equipment* Source

Wire	
Netting	
Plastic Sheeting	
Garbage Bags	
Concrete Anchors (to secure netted items to concrete floors)	
Ground Anchors for Office Trailers and Shipping Containers and/or 55 gallon Drums filled with Concrete	
Misc. Hardware and Fasteners	
Duct Tape	

* These are only example materials and equipment and should be revised for each project.



Tropical Storm Action Items

Hurricane Action Plan

Task or Activity to be Completed	Individual(s) Assigned Responsibility	Required Completion Date	Date Completed



Tropical Storm Action Items

Task or Activity to be Completed	Individual(s) Assigned Responsibility	Required Completion Date	Date Completed



Hurricane Watch Action Items

Hurricane Action Plan

Task or Activity to be Completed	Individual(s) Assigned Responsibility	Required Completion Date	Date Completed



Hurricane Watch Action Items

Task or Activity to be Completed	Individual(s) Assigned Responsibility	Required Completion Date	Date Completed



Hurricane Warning Action Items

Hurricane Action Plan

Task or Activity to be Completed	Individual(s) Assigned Responsibility	Required Completion Date	Date Completed



Hurricane Warning Action Items

Task or Activity to be Completed	Individual(s) Assigned Responsibility	Required Completion Date	Date Completed



Hurricane Recovery Action Items

Hurricane Action Plan

Task or Activity to be Completed	Individual(s) Assigned Responsibility	Required Completion Date	Date Completed



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Typical Recovery Operation Supplies

Hurricane Action Plan

Hurricane Recovery Operation Supplies *	Source
Digital cameras and video recorders – to record damage	
De-humidifiers and vacuums to minimize water damage	
Food that does not require refrigeration (i.e. MREs, canned foods, dried foods, etc)	
Pumps, misc. piping and hoses	
Water	
Portable Air Conditioning Units (if needed, especially for control centers, computer rooms, temperature sensitive equipment, etc.)	
Lighting	
Misc. Tools (chainsaws, axes, blades, fasteners, hammers, tape, wrenches, propane tanks, grill for cooking and boiling, whistle, wheelbarrow, shovels, ladders, handsaws, flashlights, etc.)	

* These are only example supplies and should be revised for each project.



Typical Recovery Operation Supplies

Hurricane Recovery Operation Supplies *

Source

Adequate fire extinguishers (municipal water may not be available)

Satellite phones (cell phone service may not be available)

Plastic sheeting / Tarps and temporary roof repair materials / Roofing paper

Garbage Bags

Power Cords

Temporary housing (supplied as needed)

First Aid Medical Equipment (if applicable, verify that recovery team members have an adequate supply of their prescription medication)

Dumpsters

Batteries

Fuel

Clorox Bleach for disinfecting

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Typical Recovery Operation Supplies

Hurricane Recovery Operation Supplies *

Source

Protective clothing and equipment (overalls, rubber boots, gloves, steel-toed boots, hard hat, eye protection, etc.)

Binoculars

Lumber, screws, nails, powder actuated fastener

Cash should be on hand for food, supplies, equipment, etc (credit and checks may not be accepted)

Mops, brooms, squeegees and absorbents

Temporary Housing (tents or mobile homes),
Sleeping bags

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