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Forum on Construction Law

The Hurricane is Coming in Five Days— Are We Ready For This?

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On August 24, 1992, Hurricane Andrew made landfall in Homestead, Florida as a Category 4 hurricane. At the time, it was the third most intense hurricane that ever struck the United States. Andrew had sustained winds of 149 mph and gusts of up to 169 mph, with a storm surge of 17 feet at landfall.[1] Andrew inflicted devastating damage throughout Florida and elsewhere, causing 23 deaths and property damage in the billions. Andrew's ferocity has since been dwarfed by storms like Katrina and Maria, which caused much greater loss of life and property damage. But unlike the latter storms, Andrew was the catalyst for sweeping changes in the Florida Building Code that imposed, among other things, stronger minimum design loads for new buildings and structures, and imposed requirements to protect against wind borne debris.

While Andrew led to needed changes and the imposition of standards for the design and construction of new buildings in high wind zones, there is precious little in the codes or other authorities that establish minimum standards for the protection of projects that are under construction when a hurricane strikes. Construction sites are uniquely vulnerable to destruction of the project itself, and of surrounding persons and property. Unfinished structures are susceptible to damage or collapse; building materials are subject to damage or destruction; and loose materials, tools, and equipment that are part of every construction project can become missiles that cause untold property damage to neighboring buildings; or worse, injury or death to nearby persons. The absence of uniform standards for securing building sites during hurricanes leave it to owners and contractors to decide the scope and extent of hurricane preparedness. Not surprisingly, the efficacy of hurricane preparedness plans can vary widely: from non-existent, to thoughtfully detailed and executed.

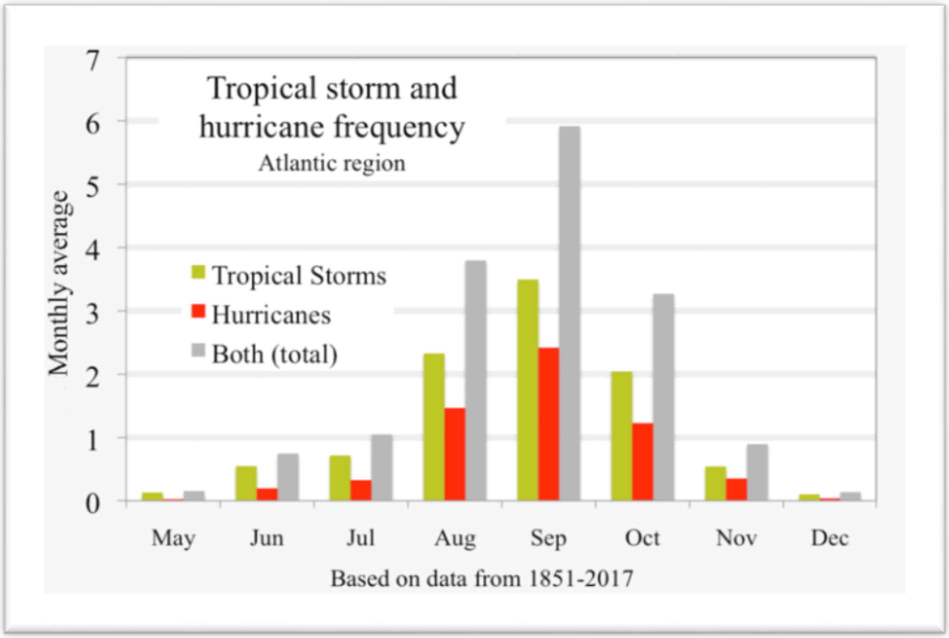
This is not a trivial matter. The geographical area that is exposed to hurricanes includes most of the eastern seaboard and the Gulf coast of the United States. These regions encompass some of the largest population centers and most active construction markets in the country. Between 2010 and 2015, there were 93 named storms, of which 41 were named hurricanes.[2] Since then, Hurricanes Harvey, Irma, Maria, and Michael have wreaked havoc in Texas, Puerto Rico, and Florida. Katrina and Harvey each caused about $125 billion in total damages. Maria has so far caused about $91 billion of losses, and Sandy and Irma each caused about $65 billion in total losses.[3] There is not much published data on the amount of losses sustained on unfinished construction projects. One report concluded that Sandy caused $185 million in damages to the World Trade Center construction site.[4] But, it is important to understand that damages are not limited to property losses. Hurricanes can result in changed conditions, delays in procurement, and reductions in labor productivity that inevitably delay completion and increase the costs of construction.

The good news is that hurricanes are predictable and confined to a known (though large) geographical area. Usually, there are days of notice before a hurricane strikes, which allows for the implementation of preparedness plans. In short, the case for having effective hurricane preparedness plans and properly executing them is manifest. This paper will discuss the minimum recommended elements for hurricane preparedness plans and address some of the legal issues that arise before and after "the storm strikes."

I. NATURE OF THE BEAST

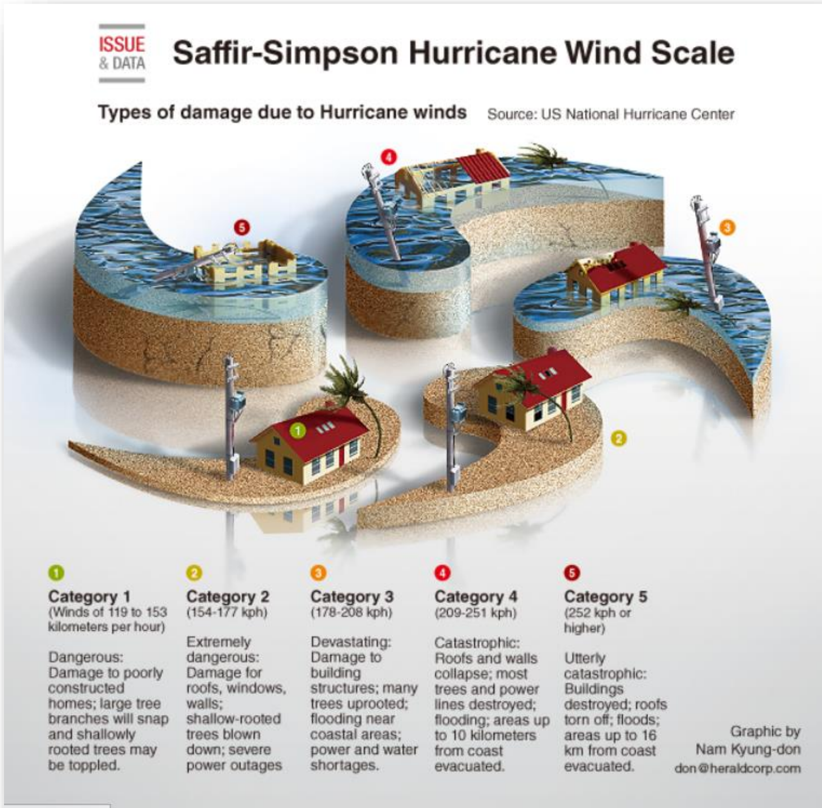
A. The Basics - What You Need to Know About Hurricanes

The first step in devising a hurricane preparedness plan is to understand the nature of the beast: what do you need to know about hurricanes? A hurricane is a "rotating mass of wind that circulates around a calm center called the eye."[5] Hurricane season in the Atlantic, Caribbean, and Gulf of Mexico runs from June 1 to November 30. As is reflected in the chart below,[6] the most active part of the Atlantic season is in August and September:



Many people think of hurricanes as confined to the eastern United States and the Gulf coast, and it is certainly true that the largest and costliest storms typically originate in the Atlantic. However, the Pacific Ocean also spawns damaging storms. The hurricane season in the Eastern Pacific Basin runs from May 15 to November 30; the season in the Central Pacific basin, like the Atlantic season, also runs from June 1 to November 30.

Storms are categorized by strength, based on the Saffir/Simpson Hurricane Wind Scale. The least powerful of tracked storms is a tropical depression, which is an organized system of clouds and thunderstorms with sustained maximum winds of 38 mph. The next in intensity is the tropical storm, which is defined as an organized system of strong thunderstorms with well-defined circulation and maximum sustained winds between 39 and 73 mph. Hurricanes fall into five categories:



As reflected in the preceding table,[7] hurricanes that are classified as Category 3 or higher are considered major storms. These storms typically cause extensive inland flooding. Electricity and water are commonly lost for weeks or months, and these storms cause extensive to catastrophic damage to buildings and structures.

Hurricanes not only cause big winds, but also bring big water. In fact, flooding often accounts for as much damage to property and loss of life as does wind damage. Storm surge is an abnormal rise in sea level that accompanies a hurricane or other storm. When combined with high tides, storm surge can literally inundate large sections land. It follows that the larger the storm, the greater the expected storm surge:

Saffir-Simpson Hurricane Scale

Category	Wind speed mph (km/h)	Storm surge ft (m)
5	≥156 (≥ 250)	>18 (> 5.5)
4	131 – 155 (210 – 249)	13 – 18 (4.0 – 5.5)
3	111 – 130 (178 – 209)	9 – 12 (2.7 – 3.7)
2	96 – 110 (154 – 177)	6 – 8 (1.8 – 2.4)
1	74 – 95 (119 – 153)	4 – 5 (1.2 – 1.5)
Additional classifications		
Tropical storm	39 – 73 (63 – 117)	0 – 3 (0 – 0.9)
Tropical depression	0 – 38 (0 – 62)	0 (0)

However, the extent of the storm surge can vary widely depending on the local geography. As an example, Hurricane Katrina, a Category 3 storm, produced a storm surge of 28 feet. Hurricane Ike, a Category 2 storm, produced a 20 foot storm surge. On the other hand, Hurricane Charley, which made landfall as a Category 4 storm, caused a storm surge of only 6to 8 feet. Thus, there is not always a direct correlation between wind speed and storm surge. The size of the surge is affected by the unique contour of the coastal area. This underscores the importance of having project-specific hurricane preparedness plans that address local conditions.

B. The Construction Site: Sticks and Bricks

It is difficult to imagine an environment riper for destruction than a construction site during a hurricane. By definition, construction sites consist of unfinished, temporarily supported structural systems and are littered with materials, equipment, tools, and other items that can easily become flying debris. Unfinished structures are especially vulnerable to high winds and storm surge. As will be discussed in greater detail below, all of these conditions should be addressed in a hurricane preparedness plan.

C. The Construction Project: Intangibles

So far, this paper's focus has been on the impact hurricanes are likely to have on the physical aspects of construction projects. However, protecting against the potential for damaged property is only one piece of what a hurricane preparedness plan should address. Delays and related impacts can quickly put contractors upside down, not only with owners who expect their projects to be completed as early as possible, but also with subcontractors who will have their own problems to address in the aftermath of a hurricane.

It is not uncommon for construction contracts—especially those on public projects—to contain no damages for delay clauses. Because these clauses are common, and because hurricanes are considered force majeure events, contractors are typically entitled only to a time extension and possibly some limited cost increases (i.e., extended general conditions costs), but not to all of the increased costs associated with the resulting delay. Moreover, many contracts have liquidated damages provisions which impose per diem damages for every day the project remains unfinished after the contract substantial completion date. So, not only do contractors face the possibility of not recovering all of the costs associated with the delay, but they may also be exposed to paying the owner significant liquidated damages. These circumstances combine to create a perfect storm for the development of disputes between the owner and contractor, and between the contractor and its subcontractors.

The most obvious time-related damages are those associated with demobilizing and preparing for the storm, the time the project is unavailable for work due to the storm, and the time necessary to re-mobilize. A well-prepared and executed hurricane preparedness plan should address the first concern. If the parties have agreed upon a comprehensive plan, the time and cost for its implementation can be reasonably predicted and incorporated into the negotiations and contract (more on this below); what happens after the storm, however, is less predictable.

One factor that commonly contributes to delays, but is not often addressed in hurricane preparedness plans, is the disruption of supply lines. Hurricanes often trigger runs on certain building materials. The damage caused by hurricanes creates needs for materials such as drywall, gypsum sheathing, plywood and lumber, windows, doors and exterior cladding, and roofing materials, all of which are acutely needed to repair damaged homes and commercial establishments. When hurricanes occur in rapid succession, as they did in 2017 and 2018 (*see* tables[8] below), suppliers simply cannot keep pace.

After Harvey and Irma struck Texas and Florida, respectively, there were roughly 600,000 homes that needed to be reroofed. [9] Material shortages not only have an impact on near term availability – which, obviously affect scheduling – but also on prices. According to the National Association of Home Builders:

> Prior storm events suggest prices can increase 10% or more for many kinds of materials, with those price effects moderating in afew quarters and returning back to economic fundamental trends.[10]

Thus, the failure to account for material shortages and price increases in advance of large storms can have enormous impacts on the bottom line.

Another impact that is often overlooked is reduced labor productivity. An obvious cause of reduced productivity is inaccessibility to the project site. If laborers cannot get to the project, then they remain idle, have to be directed to other projects, or are laid off. Lack of materials or damaged equipment can also slow productivity. There is also the human factor. Laborers, after all, are human beings with families and homes that may also have been adversely affected by the storm. Such distractions can demoralize the workforce which, in turn, will adversely affect productivity.

In addition to material shortages and reduced labor productivity, hurricanes are usually followed by labor shortages. After Harvey, the National Association of Homebuilders estimated that between 10,000 and 20,000 construction workers would have to be directed to Texas alone in order to meet the increased demand.[11] The increased demand for construction workers creates a competitive environment that makes it harder for general contractors, and especially subcontractors, to maintain their respective workforces.

II. PLAN CHECKLIST

A. Collaborative Effort

While the primary burden of drafting and implementing the plan usually lies with the general contractor or construction manager, the plan should include input from all the key players, including the owner, design professionals, subcontractors and, in some cases, the authority having jurisdiction. To be sure, the owner should be a key participant in the process. The owner is likely to have more local knowledge than the other parties and has a bigger stake in protecting against the impacts of a storm. At a minimum, the plan should be submitted to the owner for review and approval before it is completed.

Ideally, the plan should be completed early so that it can be included as a special section of the project specifications. And, because the plan is only as good as the people who will implement it, it is equally important to identify the key players who will implement the plan and confirm that they are qualified to do so. In addition to the owner and contractor, the design professionals and subcontractors will have parts to play. Including the plan as part of the specifications will not only assure that these parties have notice of the plan, but also that they become contractually obligated to do their part.

B. Project-Specific Conditions

While all hurricane preparedness plans should include elements that are common to all projects, there is no such thing as "one size fits all." Plans should be project-specific. At the very least, they should reflect local conditions. Obviously, an inland project that is less likely to be affected by storm surge should focus more on the impacts of wind damage. An oceanfront project must address wind and storm surge. A project located on a barrier island must consider post-storm accessibility issues more than a project on the mainland as access to barrier islands is often delayed for longer periods than access to inland areas.

The nature of the project should also inform the plan. Does the project consist of a single or multiple buildings? Is it a high rise? Will it require deep pile excavation? Will it require onsite storage of materials for extended periods of time? These are among the many questions the answers to which will help develop a plan that will be uniquely suited to the project.

C. Plan for the Worst

Although, as noted above, there is no "one size fits all" hurricane preparedness plan, there are certain elements that should be part of all plans. Every hurricane preparedness plan should assume the worst-case scenario. While predicting the future is usually a fool's errand, the increased intensity of recent storms should provide all of the incentive necessary to assume that if a project is undertaken in a hurricane zone during hurricane season, it will likely be affected by a major storm (Category 3 or higher). The data certainly bears this out. Thus, in a year where 10 to 16 named storms are predicted – and that is not unusual – there is a 74% chance that 4 to 8 of the storms will be hurricanes, and about half of those will be Category 3 or higher.[12]

D. Checklist

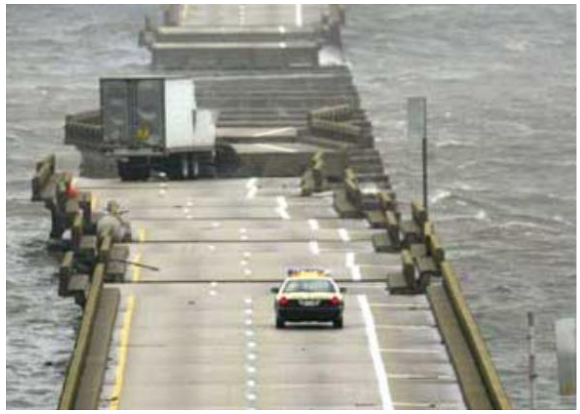
Following is a checklist of items that should be considered for every hurricane preparedness plan:

Name the Key Players

It is not enough to simply require the general contractor or other party to have a plan in place. The team responsible for implementing the plan should be specifically identified, and a single individual should be designated as lead. The team should prepare a contact list and a have a communication plan in place before the storm. Obviously, the communication plan should account for the almost certain loss of power during and after the storm.

Access to the Project

As is illustrated by the images below,[13] access to the project after the storm should not be assumed. If the project is near the coast or on a barrier island, access to the entire region may be impeded by damage to roads and bridges, or for security reasons. It is not uncommon for initial access to be restricted to first responders and government personnel. The team should arrange with the local authorities to obtain "first responder" status for the purpose of gaining early access to the project.



Check Applicable Laws and Other Resources

While there are precious few laws or codes that address hurricane preparedness for ongoing construction projects, there are some regulations that impose requirements for handling emergencies in the workplace. For example, the Occupational Safety and Health Administration ("OSHA") requires emergency action plans for circumstances that may overlap hurricane preparedness. OSHA requires that a written emergency action plan be in place for, among other things, (i) "reporting a fire or <u>other emergency</u>;" (ii) for emergency evacuation; (iii) for employees who remain to operate critical operations; and (iv) for performing rescue operations or providing emergency medical care.[14] These plans must not only be in writing, but must be maintained at the workplace and available for employees to review.[15] Additionally, the employer must "review the emergency action plan with each employee covered by the plan." [16] Though this regulation does not directly apply to hurricane preparedness, it does touch on some areas – such as evacuation, reporting, and training – that overlap some of the elements of hurricane preparedness plans for construction projects.

OSHA has also published an online "Hurricane eMatrix," which includes recommendations for assessing and addressing hazards that commonly arise following a hurricane:

> Response and recovery work in hurricane-impacted areas presents safety and health hazards that should be properly identified, evaluated, and controlled in a systematic manner to reduce or eliminate occupational safety and health risks to response and recovery workers. This Matrix provides information on assessing and controlling the hazards common to most response and recovery work in hurricane-impacted areas. Although this document was developed from data and experiences arising out of response and recovery work following Hurricanes Katrina and Rita, this document may also be applied to response and recovery work following future hurricanes, floods, and other natural disasters.[17]

In addition to the OSHA regulations and eMatrix, many municipalities and governmental agencies have hurricane preparedness plans. Though these plans are not usually directed at construction projects, they contain important information. As an example, the City of Miami Beach – no stranger to hurricanes – has a fairly extensive plan that addresses things like emergency evacuations and access to information.[18] If a construction project is in a jurisdiction with an emergency preparedness plan, the jurisdiction's plan should be reviewed in conjunction with the development of a project-specific preparedness plan to ensure proper coordinated.

Insurance Companies

Insurance companies are good resources for developing hurricane preparedness plans. Many insurance companies write business risk policies that cover damages to construction projects arising from casualty events, such as storms (more on that below). Because these companies have obvious stakes in minimizing losses arising from hurricanes, some have published fairly elaborate checklists and other resources for protecting against storm damage during construction. One example is Allianz, which published a fairly elaborate "handbook" with useful information about storms and suggestions for protecting against storm damage.[19]

Materials

Construction projects typically have materials stored onsite, such as: lumber, steel, fill material, drywall, MEP equipment, etc. As much as is reasonably possible, prior to a storm, onsite materials should be protected from wind, rain, and storm surge. If feasible, materials should be moved to higher ground or away from the high impact areas.

Additionally, deliveries should be monitored and stopped when the storm's approach is clear. Most plans call for material deliveries to be stopped when there is a hurricane watch for the area; they certainly should be stopped when a hurricane warning is issued. Arrangements should be made with the supplier to assure that the materials will be held for the project at the agreed upon price, and not diverted for other uses that will delay ultimate delivery. It is important to bear in mind that hurricanes usually cause a significant spike in demand for certain materials, such as drywall, roofing, and exterior claddings. The increased demand often affects price, so it is important to address these concerns before the storm.

Protect Interior

Close or cover all doors, windows, or exterior openings. This will not only reduce water intrusion and the attendant damage it brings, but also protect against excessive wind loads.

Secure Loose Equipment, Tools, and Temporary Facilities

Most construction projects have significant quantities of heavy equipment such as: cranes, hoists, scaffolding systems (including hanging scaffolds), generators, and dewatering equipment. All loose equipment, tools and implements are susceptible to damage and must be tied down or otherwise anchored in advance of a storm's impact.

Protect Papers and Data

In preparing for a major storm, the protection of project documents is vital and often overlooked. Large construction projects generate enormous amounts of documentation, including design documents, requests for information, architect's supplemental instructions, shop drawings and submittals, project correspondence, inspection reports, and the like. These documents will be necessary to complete the project and also to provide an accurate history of the project and serve as the basis for preparing an accurate as-built set of drawings. Project documents and data should be removed and relocated to a safe location. This includes all electronic means of documenting the project.

Brace Incomplete Structures

Among the costliest risks during storms is the collapse or failure of incomplete structures. Incomplete buildings (or portions of buildings) that are designed to withstand significant wind loads can become sitting ducks in the face of winds from even Category 1 storms. As much as is possible, steps should be taken to brace the structure against excessive winds and water. This usually requires input from the project's structural engineer, and may also require input from the authority having jurisdiction and the threshold inspector.

Protect Incomplete Excavation and Earthwork

Like incomplete structures, incomplete earthwork can sustain major damage in the face of heavy rains and storm surge. Accordingly, protective measures (i.e., temporary berms, sandbags, grading, dewatering, etc.) should be taken to protect incomplete earthwork.

Environmental Concerns

Many construction projects have materials that, if not properly used or stored, can cause environmental damage. These materials include paint, oil, chemicals, and other products that can pollute water or soils. Special care should be taken prior to a storm to assure that these materials are secured so as to avoid damage caused by spills or other exposure.

III. LEGAL CONSIDERATIONS

While a well-executed hurricane preparedness plan will limit the losses arising from a storm, it will not eliminate them. If nothing else, a hurricane will inevitably delay completion of an ongoing construction project. Moreover, it is rare that a hurricane does not cause property or other damage or disrupt labor and materials supplies. Accordingly, the risks associated with storms should be assessed and allocated as part of contract negotiations. Following is a discussion of key issues that should considered when addressing the risks associated with the consequences of hurricanes and major storms.

A. Force Majeure Clauses

As a general rule, the risk of loss for property damage or personal injury on a construction project is borne by the party in control of the project – usually the general contractor. It would be foolhardy, however, to leave the allocation of risks to general common law principles. In most cases, the parties carefully negotiate and allocate the risks among themselves, usually based on the nature of the risk and a determination of who is in a better position to protect against those risks. The starting point for allocating risks when it comes to hurricanes is a Force Majeure clause, which addresses risks that are beyond the control of the parties. A carefully drafted Force Majeure clause protects the interests of both parties and provides direction on how to deal with circumstances in the aftermath of a Force Majeure event, including a storm.

A typical Force Majeure clause is as follows:

> Except for a Party's obligation to pay the other Party any sum of money owed it hereunder, neither Party shall be liable for its failure to perform hereunder if such failure is due to any act or circumstance beyond the reasonable control, and not due to the fault or neglect of, of the Party claiming the event of Force Majeure event including, but not limited to the following acts or circumstances: (i) act(s) of God, (ii) war or wars, (iii) government regulation by a governmental authority having jurisdiction (including, but not limited to, any law, rule, order, proclamation, regulation, ordinance, demand, or requirement of any governmental agency), (iv) act(s) or threatened act(s) of terror, including, but not limited to any acts by organized groups of terrorists or any acts of a public enemy (v) disaster(s) (including, but not limited to, <u>hurricane, tornado, tropical storm</u>, earthquake, or major storm), (vi) any pandemic, epidemic, pestilence, plague, or outbreak, (vii) strike, lockout, or industrial disputes, (viii) civil disorder, riot, or disturbance of the peace, (ix) any third party act for which the Party who fails to perform is not responsible, or (x) any other condition or circumstance, whether similar to or different from the foregoing (it being agreed that the foregoing enumeration shall not limit or be characteristic of such conditions or circumstances) beyond the reasonable control and fault of the Party claiming the Force Majeure event. Notwithstanding anything contained herein to the contrary, it is expressly understood and agreed that any damages arising from any party's failure to properly implement the emergency preparedness plan called for in Section _____ of the Contract [or Specifications] is not excused by this provision.

Thus, a Force Majeure clause relieves a party from responsibility for damages caused by events outside its reasonable control. Bear in mind that, while hurricanes are certainly outside the reasonable control of the parties, implementation of a hurricane preparedness plan is not. Accordingly, while a Force Majeure clause exonerates the parties from damages arising from the hurricane, itself, it does not provide relief for the failure to implement a plan required by contract. A Force Majeure clause should make it clear that damages caused by the failure to properly implement required hurricane or emergency preparedness plans are not excused by the clause. In short, losses caused by the fault of one of the parties – even if they arise in the context of a hurricane – should not be considered Force Majeure events.

It is important to draft these clauses so that covered events are clearly identified. For example, it is not enough to list "storms" as a Force Majeure event. The clause should use terms of art, such as "tropical storm," "named storm," or "hurricane." In Florida, for example, strong thunderstorms are common during the summer months. Though they are usually short, it is not unusual to have storms with wind gusts of up to 30 to 40 mph, and winds of that magnitude can certainly cause damage. Unless the parties intend for such storms to be considered Force Majeure events, the clause should avoid generic terminology.

Force Majeure clauses often include language that provide for an extension of time with no monetary compensation, even in contracts without "no damages for delay" clauses, when the contractor's performance is delayed due to a covered Force Majeure event. Within reason, limiting the contractor's remedy to an extension of time is reasonable. However, the parties should consider that major hurricanes may cause extended delays and, in such cases, some form of compensation to the contractor would be in order. For this reason, parties commonly include language providing that if a Force Majeure delay exceeds a certain number of days, the contractor is entitled to compensation for its extended general conditions and general requirements costs.

If the contract does not contain reciprocal termination for convenience clauses, the parties should consider including termination rights in the event of extended delays or catastrophic losses that fundamentally change the circumstances. The parties can agree, for example, that if delays caused by the storm exceed 180 days or more, then either party can terminate, with the contractor being entitled to payment by the owner only for work performed.

If the contract is silent on these issues, the parties are left to resolve matters by relying on common law doctrines that are anything but precise. For example, impeded access to the project resulting in extended delays may justify invoking the impossibility of performance doctrine. This doctrine provides that, where the purpose of a contract becomes impossible to perform after the contract is executed, the parties may be excused from performance.[20] However, this defense comes with significant limitations. Principal among these is the concept that "[w]here performance of a contract becomes impossible after it is executed, if knowledge of the facts making performance impossible were available to the promisor, he cannot invoke them as a defense to performance."[21] A party invoking this doctrine would surely be met with the argument that, in a hurricane zone during hurricane season, a hurricane is not only foreseeable, but a fact of life. In short, there is no substitute for carefully drafted contract language that addresses and fairly allocates known risks.

B. No Damages of Delays

Construction contracts, particularly those involving public projects, often contain provisions that limit the remedy for delays. Following is a typical "no damages for delay clause:"

> No interruption, interference, inefficiency, suspension or delay in the commencement or progress of the Work from any cause whatever, including, without limitation, acts for which Owner and Design Professional may be responsible, in whole or in part, shall relieve Construction Contractor of its duty to perform or give rise to any right to damages or additional compensation from Owner. <u>Construction Contractor expressly acknowledges and agrees that it shall receive no damages for delay</u>. Construction Contractor's sole remedy, if any, against Owner will be the right to seek an extension to the Contract Time.

Combined with the Force Majeure language, this provision makes it clear that, while a contractor may be entitled to a time extension in the event of a hurricane, there is no basis for recovering monetary losses resulting from the delay. If a contractor wishes to be protected from such a potentially harsh result, it should seek to negotiate language that sets a limit on the amount of delay that the contractor is expected to absorb and that allows for recovery of, at least, general conditions or actual costs.

C. Price Escalation

As noted above, one of the most damaging and often overlooked consequences of hurricanes is the disruption of materials and supply chains and labor shortages. In guaranteed maximum price ("GMP") contracts, the contractor typically bears the risk of increases in the price of labor and materials. While imposing the risk of price escalation on the contractor may sound appealing to the owner, restricting the ability of the contractor to adjust the contract price in the event of unanticipated events will likely result in a higher GMP and potential windfall for the contractor if the events that trigger the price increases never come to pass.

A more reasoned approach is to negotiate a price escalation clause that fairly allocates risks based on predetermined circumstances. As an example, a price escalation provision could provide for an equitable adjustment to the GMP in the event price escalation results from the occurrence of certain events, or in the event prices increase more than a maximum percentage. Below is an example of such a price escalation clause for materials and equipment:

> The parties acknowledge that current market price conditions for certain building materials, products, equipment and systems may change during the course of the Project for reasons outside the control of the parties. In order not to unnecessarily overstate the contingency contained within the [GMP/Contract Sum/Contract Price], [Design-Builder/Contractor/Construction Manager] has only included a nominal escalation factor in establishing the contingency. Accordingly, notwithstanding anything in the Contract Documents to the contrary, the parties agree that should prices on the building materials, products, equipment or systems listed on attached

> Exhibit __ escalate by more than __% as to any listed item from the date the [GMP/Contract Sum/Contract Price] is established to the date such items are actually purchased by [Design-Builder/Contractor/Construction Manager] for the Project, [Design-Builder/Contractor/Construction Manager] shall be entitled to a Change Order equitably increasing the [GMP/Contract Sum/Contract Price] by the amount the price escalation exceeds said __% per item.

The clause does not have to be limited to specific materials or equipment. The parties are free to apply the escalation to all materials. The language can also be expanded to include labor and services:

> The parties acknowledge that current market price conditions for construction labor and services, as well as for building materials, products, equipment and systems, may change during the course of the Project. In order not to unnecessarily overstate the contingency contained within the [GMP/Contract Sum/Contract Price], [Design-Builder/Contractor/Construction Manager] has only included a nominal escalation factor in establishing the contingency. Accordingly, notwithstanding anything in the Contract Documents to the contrary, the parties agree that should prices on any labor, services or building materials, products, equipment or systems required for the Project escalate by more than __% as to any such item from the date the [GMP/Contract Sum/Contract Price] is established to the date such items are actually purchased by [Design-Builder/Contractor/Construction Manager] for the Project, [Design-Builder/Contractor/Construction Manager] shall be entitled to a Change Order equitably increasing the [GMP/Contract Sum/Contract Price] by the amount the price escalation exceeds said __% per item.

D. Notice Requirements

Care should also be given to notice requirements. Construction contracts, in general, and Force Majeure clauses, in particular, often require that the contractor give notice of an anticipated event within a fairly short timeframe. Of course, the requirement to give notice of an impending storm could not come at a worse time, because this is precisely the time when the parties are preoccupied with a host of activities that seem much more urgent than writing notice letters. These requirements, however, should not be overlooked, as they can result in the waiver of a party's right to seek additional compensation or time extensions. In addition to being timely, the form of notice should comply with any additional requirements set forth in the contract.

E. Documenting Losses

It is imperative to document the losses caused by the storm. The parties should take still photographs and video recordings of the project that not only depict the damage, but the overall condition of the project and nearby property both before and after the storm. The photographs and videos should be time-stamped and logs should be created so that the parties can later determine where and by whom the photographs were taken.

The parties should keep records of all storm-related expenses. Among the likely costs to track are:

a. Costs of safety and damage inspections
b. Debris removal
c. Demolition costs
d. Repairs of damage to property
e. Overtime wages
f. Extraordinary costs of transportation
g. Additional permitting costs

Without documenting the losses and resulting costs, the parties risk the inability to prove claims against each other or to support claims for insurance coverage.

F. Insurance

Though a detailed analysis of insurance issues is beyond the scope of this paper, a brief review of builder's risk insurance is necessary. Builder's risk insurance generally covers projects that are under construction against all risks, except those that are specifically excluded by the policy. Builder's risk policies cover the interests of owners, contractors, and subcontractors. Similar to homeowners' insurance, builder's risk policies typically cover losses arising from:

a. Fire;
b. Wind (may be limited in coastal areas – more on this below);
c. Water;
d. Theft;
e. Lightning;
f. Explosion; and
g. Vandalism.

Policy "extensions" are also available to cover building materials, property replacement, equipment, debris removal, labor costs and expenses, as well as temporary structures (such as cribbing, fencing, scaffolding, and the like). Some policies cover pollutant cleanup and removal. Some carriers even provide limited coverage for economic losses arising from delays and related "soft" damages and lost profits.[22] Assuring that the project is covered by builder's risk insurance is, obviously, vitally important. Accordingly, the construction contract should obligate one of the parties to procure and maintain adequate builder's risk coverage throughout the entire project.

Though builder's risk policies provide broad protections against casualty losses, there are limitations. Most policies exclude coverage for damage caused by defective workmanship or deficient design, and carriers often raise this as a defense to coverage, contending that a claimed loss was actually the result of defective design or work. The owner and contractor should be prepared to meet this defense. Setting aside the fact that, if the loss occurs during construction, the work is unlikely to be completed, and unfinished work is not the same as deficient work, there are two strong arguments that can defeat or, at least, limit the effect of this defense.

The first is that the exclusion, itself, is narrow. The typical exclusion reads as follows:

> This Master Policy, its quarterly reports and Project Certificates shall not pay for loss, damage, or expense caused by, resulting from, contributed to or made worse by any of the following, whether direct or indirect, proximate or remote or in whole or in part caused by contributed to or aggravated by any physical loss or damage insured by this Policy, except as specifically allowed below:
>
> B. Cost of Making Good
>
> The costs that would have been incurred to rectify any of the following had such rectification been effected immediately prior to the loss or damage:
>
> *(1)* Fault, defect, error, deficiency, or omission in design, plan or specification;
>
> *(2)* Faulty or defective workmanship, supplies or material;
>
> However, if direct physical loss or damage by an insured peril ensues, then this Policy will cover for such ensuing loss or damage only.

This language has consistently been interpreted to mean that the cost to rectify the faulty or defective work or design is excluded, but the cost to remedy the "ensuing" or resulting loss is not.[23] For example, in *Blaine Construction Corporation v. Insurance Company of North America,*[24] the insured sought the costs of repairing damage from condensation resulting from a subcontractor's failure to properly install a vapor barrier. Relying on the faulty workmanship exclusion, the district court dismissed the insured's claim. The Sixth Circuit reversed, holding that the "ensuing loss" to ceiling insulation and related property was covered. In other words, the cost of repairing the problems associated with the vapor barrier was not covered, but the ensuing damage caused to other property was.

Another effective argument used to defeat the defective work exclusion is the concurrent cause doctrine. Some jurisdictions hold that coverage exists where an insured risk is a concurrent cause of the loss even if it is not the prime or efficient cause of the loss.[25] In *American Home Assurance Co. v. Sebo,*[26] the insured's property sustained damage from water intrusion following heavy rains. The water intruded because of defects in the design and construction of the property. When Hurricane Wilma struck Florida in 2005, the property sustained even more water damage as a result of the storm. Sebo's claim was denied based, in part, on the defective work exclusion, and Sebo sued. The case eventually made its way to the Florida Supreme Court, which held, as a preliminary matter, that the losses were caused by both defective work (not covered) and the hurricane (covered). However, the Court found that the defective work and the storm "acted in concert" to create the damage and that there was no reasonable way to distinguish the proximate or efficient cause of the damage. Accordingly, the Court concluded that "…where weather perils combine with human negligence to cause a loss, it seems logical and reasonable to find the loss covered by an all-risk policy even if one of the causes is excluded from coverage."[27] Thus, even in cases where the carrier can legitimately point to defective work or design as a contributing cause of loss, there may be coverage, provided that it is not possible to determine the primary cause of the loss.

CONCLUSION

Benjamin Franklin's adage that an ounce of prevention is worth a pound of cure is as true today as it was when he wisely made the statement. He could well have said it about the importance of advance preparation for the ravages of hurricanes. Because there are no comprehensive code or other requirements to prepare ongoing construction projects for advancing storms, it is for the owner, designer, contractor, and other participants in construction projects to draft and implement hurricane preparedness plans. Having a hurricane preparedness plan should never be optional; it should be mandatory part of every construction project undertaken within all hurricane zones.

[1] National Hurricane Service (2010), https://www.nhc.noaa.gov/outreach/history/ (1/30/19).
[2] Hurricane and Tropical Cyclones, https://www.wunderground.com/hurricase/hurrarchive.asp, (1/30/19).
[3] List of Costliest Atlantic Hurricanes, https://en.m.wikipedia.org/wiki/Listofcostliesthurricanes, (1/30/19).
[4] Fermino – NY Post, https://www.nypost.com/2013/03/20/sandy-caused-185m-damage/7.
[5] Chavez, Michelle S., "*Hurricane Preparedness in a Construction Site: a Framework to Assess the Construction Companies' Current Practices*," (2016), FIU Electronic Theses and Dissertations, 3047. http://digitalcommons.fiu.edu/etd/3047.
[6] Tropical Storm and Hurricane Frequency, https://en.wikipedia.org/wiki/Atlantic_hurricane_season#/media/File:1851-2017_Atlantic_hurricanes_and_tropical_storms_by_month.png (1/30/19).
[7]https://www.bing.com/images/search?view=detailV2&id=2B44989B0A5CBFB95D7B00351E3D354034D12A83&thid=OIP._6If-0_0.jpg&exph=625&expw=650&q=saffir-simpson+scale (3/27/19).
[8] Hurricane Season Recap, https://www.scottmadden.com/insight/2017-hurricane-season-recap-2018-implications-utilities/ (1/30/19).
[9] Hurricane History Favors US Building Suppliers (2017), http://www.reuters.com/article.us-construction-supplies/hurricane-history-favors-u-s-building-suppliers-idUSKBN1CE10V (1/30/19).
[10] *Id*.
[11] *Id*.
[12] *Chavez*, at p. 42, *supra*.
[13] Hurricane Ivan, Images, https://www.google.com/search?q=hurricane+bridge+damage&tbm (2/8/19).
[14] 19 C.F.R. 1910.38 (b) – (c) (2018) (emphasis added).
[15] *Id*.
[16] *Id*. at §1910.38(f).
[17] Hurricane eMatrix, https://www.osha.gov/SLTC/etools/hurricane/recommendations.html (2/4/19).
[18] *See e.g*. Emergency Preparedness, https://www.miamibeachfl.gov/city-hall/emergency-management/plan-and-prepare-emergency-preparation/ (2/4/19).
[19] A copy of Allianz's handbook entitled "The Calm Before the Storm: Construction Site Hurricane Protection," can be found, online, at https://www.abceastflorida.com/wp-content/uploads/2018/06/ConstructionSiteHurricaneProtection.pdf (3/24/19).
[20] *Kamel v. Kenco/The Oaks at Boca Raton LP*, 2008 U.S. App. LEXIS 21762, 7-8 (11th Cir. 2008).
[21] *Caidin v. Poley*, 313 So. 2d 88 (Fla. 4th DCA 1975).
[22] Builders Risk Insurance, The Hartford, https://www.thehartford.com/marine-insurance/builders-risk-insurance (2/7/19).
[23] *Blaine Construction Corporation v. Insurance Company of North America,* 171 F.3d. 343 (6th Cir. 1999).

[24] *Id*.
[25] *State Farm Mutual Auto Insurance Company v. Partridge,* 514 P.2d 123, 133 (Cal. 1973).
[26] 208 So. 3d 694 (Fla. 2016).
[27] *Id*., *citing Wallach v. Rosenberg*, 527 So.2d 1386 (Fla. 3d DCA 1988).