Lessons Learned from Hurricane Irma

Daniel R. Wireman, Esq.
Cleveland Construction, Inc.
Naples, Florida

Presented at the 2019 Annual Program
April 25-27, 2019
The Diplomat Beach Resort, Hollywood, Florida

©2019 American Bar Association
I. Introduction

A. Hurricane Season in the Atlantic

Hurricane season in the Atlantic Ocean officially lasts from June 1\textsuperscript{st} through November 30\textsuperscript{th}. The peak of the hurricane season occurs in late August through September. Hurricanes in the Atlantic generally originate as tropical waves off the coast of Africa near the Cape Verde Islands. However, later in the hurricane season it is not uncommon for hurricanes to form in the Caribbean Sea or the Gulf of Mexico. These late-season hurricanes tend not to be as strong as the Cape Verde hurricanes.

B. Modern Hurricane Forecasting – Tracking the Tropics

Modern computers have dramatically improved the ability to forecast hurricane development and movement. In the United States, the National Oceanic and Atmospheric Administration is responsible for forecasting and monitoring hurricanes. This is done through the National Hurricane Center (NHC) which is part of the National Weather Service. The NHC’s website (www.nhc.noa.gov) provides continues updates for tropical disturbances in both the Atlantic Basin and the Eastern Pacific Basin. As tropical storms and hurricanes form, the NHC’s website will include the latest weather advisories as well as the forecasted “Cone of Probability.”

C. Hurricane Irma – Sunday, September 10, 2017

On Wednesday, August 30, 2017, the NHC issued a “Public Advisory” stating “IRMA FORMS OVER THE EASTERN ATLANTIC… NO IMMEDIATE THREAT TO LAND.” Within a day, Irma had strengthened into a category 3 hurricane. Irma traveled west across the Atlantic and was rapidly approaching the U.S. Virgin Islands, Puerto Rico and many other Caribbean islands by Monday, September 4, 2017. On Wednesday, September 5\textsuperscript{th}, Irma became a category 5 hurricane. The next day, Irma made land fall on U.S. Virgin Islands.
After wreaking havoc on the U.S. Virgin Islands and Puerto Rico, Irma headed for the continental U.S. At 11:00 p.m. (EDT) on Thursday, September 7th, the NHC issued a hurricane warning for all of south Florida and the Florida Keys. At this time, Irma was a category 5 hurricane with sustained winds near 165 mph. By Friday night, the eye wall was over Cuba. At 11:00 a.m. on Sunday morning, the NHC issued Public Advisory No. 46A stating “IRMA HEADED FOR SOUTHWEST FLORIDA COAST.” At 3:35 p.m. that afternoon, “the Center of Hurricane Irma made landfall in Marco Island as a Category 3 hurricane” with 115 mph sustained winds. (NHC Public Advisory).

II. Preparing for Hurricanes

A. The Dangers of a Hurricane

The most obvious danger of a hurricane is the wind damage associated with the hurricane itself. However, in coastal areas the storm surge associated with a hurricane is often far more damaging than the winds of the hurricane. Furthermore, a hurricane leaves a variety of dangers in its wake including: (1) downed powerlines; (2) standing water contaminant with sewage; (3) broken glass and debris; and (4) traffic hazards such as malfunctioning lights, downed streets signs and debris in roadways.

B. Preparing Your Company

Whether you are a law firm or a construction company, the same basic preparations should be undertaken. First, make sure that your IT systems (email, accounting, project management, etc.) are secure and that everything is backed up. If your company physically maintains its own servers they need to be in a secured location that is not susceptible to wind damage, water damage or storm surge. Ideally, you should have everything backed up to a cloud location outside of the hurricane zone.
The second step is to secure your company’s buildings, equipment and other physical property. In addition to boarding up windows and doors, consideration must be given to potential water damage inside of structures (e.g. computers, paper files, etc.) Construction sites need to be cleared of loose materials. Special attention needs to be paid to cranes, buck hoists, scaffolding and other on-site equipment. Vehicles should be moved out of areas that might experience storm surge.

The third, and most important step in preparing for a hurricane, is to prepare your employees. Just as a business needs time to prepare itself, your employees need time to prepare themselves. They need to board up their houses, stock up on supplies, take care of their children when the schools begin to close and evacuate their homes if necessary. Once the hurricane has passed, the employees will need to assess the damage to their homes, repair/clean up their houses and property, deal with closed daycares and schools, meet with insurance companies and take care of dozens of other issues. When do you expect your employees to return to work? How are you going to communicate with your employees when there is no power or cell service? Will your office be ready to operate when the employees are ready to return?

C. Preparing Yourself

If you live in an area subject to hurricanes, your preparation should begin months, if not years, in advance. For most people, their home is their biggest asset. Therefore, the hurricane planning should start with the purchase of your home. Some of the questions that you should ask yourself include:

- Is your home in an area that is subject to storm surge or flooding?
- If you live in Florida, was your home built after 2002 when the post-Hurricane Andrew building code changes were implemented?
• Do you have enough homeowner’s insurance and do I have enough savings to cover the hurricane deductible?

• If your home is severely damaged or destroyed, where will I live while it is being rebuilt?

• Can you afford temporary housing for two or three years?

In addition to housing concerns, you need to do your personal planning:

• Do you have your important papers such as birth certificates, social security cards, passports, wills, financial records etc. in a secure location?

• Do you have adequate supplies of water, food, money, gas, etc. to last at least two weeks?

• What is it going to be like for you, your family and your pets to live in hot, humid conditions for two weeks without air conditioning?

• Is your employer going to pay you while you’re off work?

• Are you going to have a job after the hurricane?

Finally, you should have an evacuation plan for you and your family:

• Where are you going?

• When do you need to leave?

• Are you going by car or plane?

• What should you take with you?

• What do you need to before you leave? (Tip: Empty out your refrigerator!)

• When will you be able to come back?

III. Executing the “Plan”

With a hurricane, you typically have several days to prepare for the event. However, a hurricane is a regional event affecting tens of thousands of people, and everyone is trying to prepare simultaneously. As a result, simple things like buying groceries and filling up your car
with gas can take hours. As the hurricane gets closer to making landfall, a sense of urgency sets in. Hardware stores run out of plywood and generators. The shelves in grocery stores become bare and gas stations run dry. Some people give up the idea of “riding out the storm” and attempt a last-minute evacuation. There are no seats left on the few remaining flights out of town and the highways become clogged and traffic slows to a crawl. Panic sets in.

Given this often-repeated scenario, the decision as to when to implement your hurricane readiness plan is critical. If you act to quickly, you may waste a considerable amount of time and money if the hurricane shifts course and heads harmlessly out to sea. If you wait too long, there is insufficient time to prepare and you get caught in a bad situation. Unfortunately, there is no easy answer to this question.

IV. Living Through the Disaster

A. The Hurricane Makes Landfall

You will typically begin feeling the effects of a hurricane days before the eye of the hurricane actually makes landfall. As a result, airports will often shut down 48 to 72 hours before the hurricane arrives. Similarly, many stores, restaurants and other businesses shut down two to three days in advance to give their employees time to prepare or evacuate. There is literally an eerie calm before the storm arrives.

Once the outer bands of the hurricane arrive, the wind and rain start going through intermittent cycles with ever-increasing intensity. Eventually, power and cell phone service are lost. With your hurricane shutters in place, there is no natural light coming into your house. You are left sitting in complete darkness waiting to see if your house can withstand the 100 mph (or more) winds. Hour after hour you sit in silence, sweating from the 90-degree heat, waiting to see if your home will explode around you. Finally, the winds subside, and you venture outside to
take in the devastation around you – completely unaware if your family and friends were also lucky enough to survive. The world as you know it has changed dramatically.

**B. Living Through the Immediate Aftermath**

Immediately after a hurricane, the first course of action is to clear the roads so that the first responders can access those who are injured or otherwise need assistance. The main thoroughfares and routes to hospitals are given priority. Once access is established, rescue and emergency operations can begin. Just as important, work crews can began accessing areas in order to restore power which is necessary for traffic lights, water systems, and sewage treatment facilities. In areas with a flat geography (like most coastal regions) the water and sewage systems depend on forced pumping (as opposed to gravity feed). In other words, you need electricity in order to have water and sanitary sewers.

Most jurisdictions will implement a curfew for the first few days following a hurricane. This is done for several reasons. First, traffic needs to be limited to allow first responders and power companies access to affected areas. Second, with the power out, there are no traffic control systems in place which creates dangerous driving conditions. Third, limiting traffic can help reduce looting and other security concerns.

It will typically take several weeks to clear the roads, restore power and cell service to all of the affected areas. Many businesses will remain closed because of the lack of power, the lack of employees and the inability to bring in goods to resupply their inventories. Gasoline will be in short supply with priority going to first responders, power crews and clean-up efforts. As the days go by without power, portions of the sanitary systems will overflow due to the inability of the forced mains and lift stations to move the sewage. This can result in raw sewage running down the middle of the street in your subdivision. After Hurricane Irma, it took approximately
five weeks for southwest Florida to return to “normal.” However, the repairs to damaged homes and buildings will continue for several years after Irma.

V. Legal Issues Arising from Hurricanes

A. Changes in Building Codes

Like most disasters, a major hurricane will cause public officials to examine the aftermath and look for areas of improvement. Florida, which leads the U.S. in number of direct hurricane strikes, has been on the leading edge of hurricane related building code development for more than twenty-five years. Florida’s legislative changes were put into motion as a result of Hurricane Andrew which hit Florida as a Category 5 hurricane in 1992 destroying 63,000 homes and damaging 100,000 more.

In the early 1970s, Florida building code standards were controlled exclusively by local government jurisdictions. This changed in 1974 when the Florida legislature enacted a state-wide building code law that required all local governments to adopt and enforce certain minimum building code standards. However, it was still up to the local jurisdictions to decide exactly what standards to adopt and how to enforce those standards. This building code system remained in place until 1992 when Hurricane Andrew hit Florida and exposed the weaknesses in this localized building code system.

As a result of Andrew, in 1996 the Florida Building Code Study Commission was appointed to review Florida’s existing building code systems and to make recommendations for improvement. In 1998, the Florida legislature adopted the Study Commission’s recommendations and amended Chapter 553 of the Florida Statutes to create the “Florida Building Code Act.” §§ 553.70 – 553.898, Fla. Stat. The intent of the act was, among other things:
1. To provide for a single, unified state building code known as the “Florida Building Code;

2. To provide local governments with the power to inspect and enforce the building code standards; and

3. To create the “Florida Building Commission” to oversee the Florida Building Code.²

The Florida Building Commission consists of 27 members from the construction industry who are appointed by Florida’s governor and approved by the Florida Senate.³ The Commission has general rule making authority pursuant to Florida’s Administrative Act.⁴ The Commission also has specific the authority to “update the Florida Build Code” and to “make a continually study of the operation of the Florida Building Code … and determine the effectiveness of their provisions.”⁵ In other words, the Florida Building Code is intended to evolve to accommodate “lessons learned” and new technology.

As this paper is being written, changes to the Florida Building Code are being debated as a result of Hurricane Michael which hit Florida’s panhandle region on October 10, 2018 as a Category 4 hurricane. The current Florida Building Code requires areas in South Florida to conform to “high velocity” wind zones (160 mph to 180 mph) for new construction. However, the region in the Florida Panhandle where Hurricane Michael came on shore, the structures are only required to be designed for 130 mph (or less) wind speeds. Michael’s 155 mph wind speeds proved devastating. As a result, consideration is being given to revising the Florida Building Code to accommodate these higher wind speeds.

B. Suspension of Contractor Licensing Laws

Florida, like many states, has strict contractor licensing laws. Florida’s contractor licensing requirements are codified at §§ 489.101 through 489.146 of the Florida Statutes. The
Florida Statutes set forth the various types of contractor licenses that are required for different types of work.\textsuperscript{6} For example, there are licenses for general contractors, building contractors and residential contractors.\textsuperscript{7} There also license requirements for various specialty contractors such as mechanical contractors, plumbing contractors, and roofers.

As one can imagine, after a hurricane there is tremendous demand for roofing contractors. In Florida virtually all roofing work must be performed by a licensed “roofing” contractor. Licensed general contractors, residential contractors and building contractors typically cannot perform roofing work but must subcontract this work out to a licensed “roofing” contractor. Given the amount of roof damage caused by a hurricane, there is often simply not enough licensed roofing contractors available to perform the necessary emergency repairs.

Prior to Hurricane Irma making landfall, Florida Governor Rick Scott issued Executive Order No. 17-235. Executive Order No. 17-235 contained a variety of emergency measures designed to deal with the aftermath of Hurricane Irma. As part of this Order, Governor Scott temporarily suspended Florida’s roofing contractor licensing requirements to allow general contractors, residential contractors and building contractors to perform roofing work. Other Florida governors have taken similar actions in response to other past hurricanes.

\textbf{C. Legislative Changes Related to Life Safety Issues}

In one of the most tragic chapters of Hurricane Irma, twelve residents at the Rehabilitation Center at Hollywood Hills nursing home in Hollywood – just a few miles from the location of this seminar, died from heat exposure in the days following the hurricane. For sixty-two (62) hours after Irma, these nursing home residents were stuck in their facility without air conditioning. According to the Agency for Health Care Administration, the temperature in the
nursing home reached ninety-nine (99) degrees. The Broward County Medical Examiner’s office ruled all twelve (12) deaths as homicides attributed to environmental heat exposure.

In response to this tragedy, Florida enacted emergency rules requiring nursing homes and assisted living facilities to have alternate power sources – such as generators – and fuel stocks available during power outages. These rules were then ratified by the Florida legislature in HB7099 and SPB7028. However, many facilities have been granted time extensions to comply with these new rules.

VI. Lessons Learned from Hurricane Irma

A. “Global” Planning is Essential

Every individual and company in a hurricane zone should have a detailed plan on how to respond to a hurricane threat. Although it is relatively simple to prepare a plan on an individual basis, things can become complicated when everyone’s individual plans start conflicting with each other. For example, your plan to evacuate by air must integrate with Delta’s plan to move its jets out of the path of the hurricane. Similarly, Delta’s plans to move its jets must integrate with the airport’s plan to shut down its facilities so that its employees can evacuate. In other words, you may have a great plan to catch the Thursday afternoon flight out of town, but that flight might get canceled because of Delta’s or the airport’s plans.

The lack of “global” planning during Irma manifested itself in two ways. First, as described in the Delta scenario, there were conflicting plans which resulted in lots of plans being disrupted. Second, many plans required the use of the same resources which often resulted in a competition for those resources. For example, the airlines sold out of seats, hardware stores sold out of plywood and generators and groceries sold out of bottled water and other necessities. The best advice for avoiding these “global” issues is to avoid waiting until the last minute to execute
your plan so that you miss the last-minute rush. In other words, take the Tuesday flight out of town instead of the Thursday flight. Similarly, stockpile water and other supplies weeks in advance. Install storm shutters in lieu of boarding up with plywood. Anything that you can do in advance will make you better prepared.

B. The Event Lasts Longer Than You Anticipate

Unlike a tornado or earthquake, a hurricane event can last for several days. The tropical force winds and rain can arrive a day or two before the hurricane makes landfall. Once a hurricane makes landfall, it can remain stationary for days causing massive flooding. After the hurricane moves through, it can take several days to clear the roads and restore power so that life can begin getting back to normal. Overall, a hurricane event can severely disrupt life for seven to ten days or even longer in flood prone areas. After Hurricane Irma, there were several communities in Bonita Springs, FL that remained flooded for three weeks. As a result, your hurricane plans should account for this extended period of time.

C. The Supply Chain Disruptions Are Significant

Virtually everything that is available for purchase in a modern society is created and delivered to the point of sale by a complex, logistical supply chain. Whether it be roof tiles or lettuce, these goods are typically sourced at one location and delivered to the point of sale via planes, trains, trucks or other means of transportation. Prior to a hurricane striking, there is a spike in the need for various goods such as gasoline and bottled water. During the hurricane, grocers experience a tremendous loss of inventory due to the lack of power, i.e. refrigerated goods go bad. Other types of inventory can also be destroyed by the hurricane itself. After the hurricane, there is an immediate need for the building materials needed for repairs. Stated differently, a hurricane will create an immediate demand on the supply chain for a variety of
different goods. To make matters worse, in addition to placing a strain on the supply chain, a hurricane will often cause significant damage to a critical part of the supply chain, i.e. the “Last Mile” of delivery.

The “Last Mile” of delivery is the final leg of the delivery in the supply chain. It typically refers to the delivery of goods to the final point of sale. A hurricane can destroy the ports, rail depots and transfer warehouses that receive the goods locally thereby disrupting the ability to complete the Last Mile delivery. Many of the truck drivers and delivery personnel involved in the Last Mile delivery are not available because they have evacuated or have otherwise been displaced by the hurricane. Until the Last Mile infrastructure, including personnel, is fully restored, the supply chain will be impacted.

Disruptions further up the supply chain can also be encountered. For example, material supply houses can run out roofing materials due to all of the required hurricane repairs. It will take some period of time for the manufactures to ramp up production. Similarly, it will take additional shipping resources to meet the increase transportation demand. Ultimately, this will put an additional strain on the Last Mile of delivery infrastructure which was already impacted by the damage from the hurricane. Simply stated, it is going to take a while to get your roof fixed.

D. The Psychological Impact is Significant

We have all seen the Weather Channel reporters broadcasting from a hurricane zone. However, it is very different when Jim Cantore shows up in your town. It is easy to say, “its only stuff” or “I can replace everything if I need to,” but when you are faced with losing everything, it is sobering. When the reality sets in that your family and friends may die in the coming days, it is devastating! There is no way that you can prepare yourself for this aspect of a
hurricane. All you can do is understand what will happen, and you just need to find some way to get through it. In conclusion, hurricanes are extremely dangerous and they kill people. Be prepared and evacuate if possible.

1 The Public Advisories cited herein can be obtained at www.nhc.noa.gov.

2 § 553.72, Fla. Stat.

3 § 553.74(1), Fla. Stat.

4 § 553.76(1), Fla. Stat.

5 § 553.76(1)(a) and (b), Fla. Stat.

6 § 489.105(3)(a) – (q), Fla. Stat.

7 Id.


9 Much like the supply chain workers, many construction workers will also be unavailable after a hurricane. As a result, even if can get the construction supplies to where they are needed, there may not be enough workers to complete the repairs.