

The Collapse of Surfside: A Case Study

Introduction

The collapse of a condominium in Surfside, Florida led to 98 confirmed deaths.¹ The tragedy led to building audits across the country and rapid implementation of existing and new local building and enforcement codes to ensure buildings were safe for occupancy and that they met certain certification requirements, specifically the Florida Condo Safety Act.

Facts about the Case

On June 24th, 2021, at approximately 1:20 a.m. a 12-story, 136-unit condominium in Surfside, Florida collapsed in minutes. Survivors recounted their experiences when the building collapsed, specifically survivors reported hearing loud noises, around 1:10 am, which was thought to be construction, but turned out to be the first instance of collapse starting with the building's garage.

As reported in the Miami Herald, the collapse began in the ground-floor parking and pool-deck area² of the condominium, which is located in Surfside, Florida. The incident led to 98 deaths and 11 people injured. Thirty-five individuals were rescued from the parts of the building that had not yet collapsed but which were in danger of doing so, and four people were pulled from the rubble and survived. Among the initial 18 confirmed deaths, were two children, sisters, ages eleven and four-years-old.¹ Many people were initially thought to be missing, but were later found to be safe, offsite. Following the collapse of the condo, a settlement was reached for roughly \$1 billion dollars to be given to the loved ones of the deceased.¹

It was hypothesized that lax enforcement of building maintenance codes and lack of necessary repairs to the structure, combined with the risky coastal location of the condominium, was the cause of the collapse. The building, built in 1982, was part of the three-building complex, and located near the ocean. The complex was at risk of repeated exposure to aggressive storms and rising sea levels, with the ultimate cause of collapse believed to be attributed to seawater incursions on the concrete slabs in the pool deck area. The pool deck area was poorly constructed and lacked sloping to allow for drainage of sea water. In 2018, an engineering inspection report stated that "the failure to replace the waterproofing in the pool deck area would eventually lead to concrete deterioration, and indeed this was determined to be the ultimate cause of collapse."² Tenants and the homeowner's association frequently reported flooding in the underground garage.³ At the time of the collapse, Florida had no regulations or laws regarding structural repairs for condominiums.

The damage to each of the condominiums reached approximately \$160,000 per unit, and the price of restoring them, where most were irreparably damaged beyond salvage, far beyond what a majority of homeowners were able to afford.³ Various fundraising events were held to help support those affected with the burden of finding new suitable housing.

In May of 2022, Florida passed the Florida Condo Safety Act, which enforces various inspections of condominiums.³ The goal of the Florida Condo Safety Act is to ensure that a tragedy, such as depicted here in Surfside, Florida, never occurs again.

Kristen Gladish
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Epidemiological Aspects of the Event

While few epidemiologic studies were conducted in regards to the collapse of the condominium, the day following the collapse in Surfside, the U.S. The Department of Commerce's National Institute of Standards and Technology (NIST) began an investigation to determine the origin of the cause of the collapse. NIST investigations can take years to complete, with data collected alongside search-and-rescue efforts so as not to cause any delay in the rescue.⁴ The main hypotheses of the collapse revolved around the lack of implemented regulations and actions taken to ensure that the 40-year-old condominium was structurally safe for the tenants. Furthermore, the housing was thought to be high-risk due to its location alongside the coast where salt water, high winds, and severe storms frequently inflict damage upon buildings. Saltwater erosion is thought to be a main cause of the building collapse. A peer reviewed study, regarding how rising sea levels can inflict great damage on residential properties, depicted the correlation between rising sea levels and the amount of water infiltration on the ground floor.⁵ The author further hypothesized that with the rising sea level, salt and freshwater would mix, leading to damage inflicted on flooded buildings such as the condominium in Surfside.⁵

Management of the Event

Rescue teams, local and even international, swept through rubble from the crumbled condominium for a week. The majority of the search was conducted through demolished bedrooms, buried beneath 13-16 feet of concrete, because the collapse was estimated to have occurred while most people were sleeping.¹ Further compounding the difficulty of the search and rescue mission was the intermittent rain and thunderstorms that necessitated work stoppage. Despite the adverse conditions rescue teams remained hopeful. Canine teams were deployed to assist in the search and rescue. Additionally, the community gathered to raise \$1.9 million dollars to further aid those affected by this tragedy.³

Communications of the Event

The collapse was relayed to the public through major media channels, and consistently updated as news was obtained. Harrowing reports of lost loved ones, such as the instance in one case, of a victim on the phone with a loved one, who was depicting what she saw, specifically cracks in the ground near the pool area, when suddenly her loved one heard the victim scream and the call abruptly ended. The occurrence of news and updates throughout the event was rapid and unfortunately, not cohesive, eliciting further panic from the event.

Summary

The collapse of the Surfside condominium revealed the dangers of ignoring and delaying structural repairs to housing, as well as the harm from a lack of implemented regulations and laws to protect building occupants especially those in high risk, flood prone areas. Lives were unnecessarily lost due to lax building codes, engineering codes, and enforcement of inspection. This will be increasingly important with climate change as sea levels rise and salt water encroaches on building structures. The collapse of the condominium in Surfside, Florida increased awareness about the importance of safety assessments, plans, preparedness, and regulations, especially in vulnerable coastal areas.

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Resources

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