



Future Proofing for Resilient Infrastructure

WHAT ARE THE BEST PRACTICES TO BUILD STRUCTURES WITHIN 100 FEET OF THE FLORIDA SHORELINE?

At A Glance

The Unpredictability of Rapid Climate Change presents a unique problem for Florida's Coastline. Archaic building codes that have not take into consideration the rapid rising sea level and its effects can lead to similar devastation such as the collapse of the Champlain Towers In 2021.

Policy Implications

- Invest in developing an Environmental Architecture and smart technologies research at FIU using funds from FL \$1 trillion infrastructure bill.
- Develop a county Climate Change & Infrastructure Committee for Future Proofing using smart technologies
- Draft an ordinance to require evaluation and approval of Florida's shoreline properties and infrastructure by Climate Change & Infrastructure Compliance Committee and Coastal Geologists.

Key Findings

- pH-buffering building materials had positive outcomes on concrete coastal structures in coastal communities. (Oceanacidification, 2018)
- Biomimicry can lead to resilient structures, that also metabolize carbon, by mimicking natural systems. (Crook, 2021)

Policy Recommendations

THIS BRIEF FOCUSES ON A TWO-PRONGED APPROACH TO IMPLEMENT CLIMATE CHANGE FORECASTING AND ENVIRONMENTAL ARCHITECTURE AS A SOLUTION TO DEVELOPING RESILIENT STRUCTURES NEAR FLORIDA'S ERODING SHORELINE

According to data from Sea Levels Rise.org (n.d.), Scientists now forecast that in just the next 15 years, the sea level [near Miami] will have risen by another 6 inches (sea level rise.org, What's the Future of Sea Level Rise, n.d.). We should begin to build resilient shoreline structures with rapid climate change in mind. Part of the reason for the collapse of Champlain Towers may have been due to poor construction of a waterproofing layer that affected the concrete over the site of the parking garage where the collapse occurred, but according to an NBC news reports in 2021, there is another theory that sea board flooding may have also contributed to corrosion of the building structure (Schuppe, 2022).

Issues surrounding climate change, hurricanes and rising water affecting our state are here to stay, and both mitigation and resilience my help bolster shoreline infrastructure. I propose that involvement through a county ordinance from a Climate Change and Infrastructure Committee, and the use of smart technologies throughout the duration of construction and follow up inspections, may have ameliorated the development of this property and other similar properties in the city. Hormozabad and Soto (2021) report smart technologies like SHM(structural health monitoring) and SVC (structural vibration control) "self-diagnose, self-power, self-adapt, and self-heal during normal and extreme operating conditions" and could have provided advance notice in Florida regarding the towers (Hormozabad et al, 2021).

Lastly, in a coastal city such as Miami, mapping and monitoring climate change in order to inform development can be a mitigation tool used as a model throughout the state. Additionally, supporting a research program in environmental architecture and future proofing infrastructure focused on shorelines, housed at Florida International University, could prove to be a win -win demonstrating a long-term county commitment to resilient shoreline Infrastructure.