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An Innovative Climate Change Adaptation Solution for Freedman's Cottages in Charleston, SC

Protecting historic architecture, urban fabric, landscapes and the populations who inhabit them from the growing risk of flooding wrought by climate change is a challenging prospect. Communities are faced with responding to increasing climate change-induced crises and adapting to a dramatically changing environment, having only a limited set of tools that are inadequate to cope with the intensity and urgency of the impacts. Successful adaptation strategies require a level of cultural sensitivity that is often lacking in conventional flood mitigation measures such as permanent static elevation. Forward-looking, creative approaches are needed, capable of responding and adapting to future levels of flooding that are difficult, if not impossible, to quantify in advance, especially in our current state of climate uncertainty.

Amphibious architecture is an innovative approach to climate change adaptation that is in early stages of technical development and refinement. It is a flood risk reduction strategy that works in synchrony with a flood-prone region's natural cycles of flooding, rather than attempting to obstruct them. A buoyant foundation is a retrofit of an existing building that enables it to remain in place until flooding occurs when it rises and floats on the water's surface until it returns to its original position as the floodwater recedes. Unlike permanent static elevation, a buoyant foundation retrofit is capable of providing heritage structures with protection from flood damage with little or no change to the appearance of the building or loss of visual coherence of the neighborhood. Although buoyant foundations are not universally suitable for all types of flooding or construction, nonetheless in appropriate situations they have much to offer to cities in a crisis that have few other culturally acceptable options.

According to the new Union of Concerned Scientists' study, "When Rising Seas Hit Home," by the year 2100 even moderate sea level rise will bring chronic innundation to the city of Charleston, South Carolina. Citizens are grappling with how best to adapt to the new climate conditions without compromising the character and integrity of their historic neighborhoods. In Charleston, the

“freedman’s cottages” are representative of Charleston’s architectural tradition of building “tiny homes” well before this typology gained its current appeal. These very modest dwellings, constructed throughout the 1800s, typically range from only 300 to 500 square feet. They were originally built for the families of workers employed by the wealthy upper class who lived in considerably larger and grander versions of the same basic typology. Today, these easily affordable and adaptable historic houses are threatened by relentlessly rising seas. It is anticipated that in less than twenty years, low-lying neighborhoods such as those in the Lower Peninsula that are home to concentrations of freedman’s cottages will suffer from regular and repetitive flooding occurring more than two dozen times per year. Buoyant foundations offer an affordable alternative to under-resourced communities and neighborhoods to fight buy-outs, teardowns and displacement. This new approach provides an innovative technical solution for communities such as Charleston with significant cultural heritage and profound attachment to place and home.