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Northeastern University

Growing with the Tides

Saving Boston from Sea Level Rise with a New Eco-District

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By 2113 Boston will experience sea level rise and storm surges 10' above current high tides resulting in catastrophic urban inundation, the need for coastal retreat, and billions of dollars of economic losses. At particular risk is a vast swath of the city historically known as South Bay, stretching from Carson Beach to Northeastern University, and from Fort Point Channel to Upham's Corner. This zone has been filled over the last four centuries creating a floodplain home to dense neighborhoods, commercial corridors, and an infrastructural/industrial district that is, in many ways, the lifeblood of the region and is at high risk of decimation from coastal flooding.

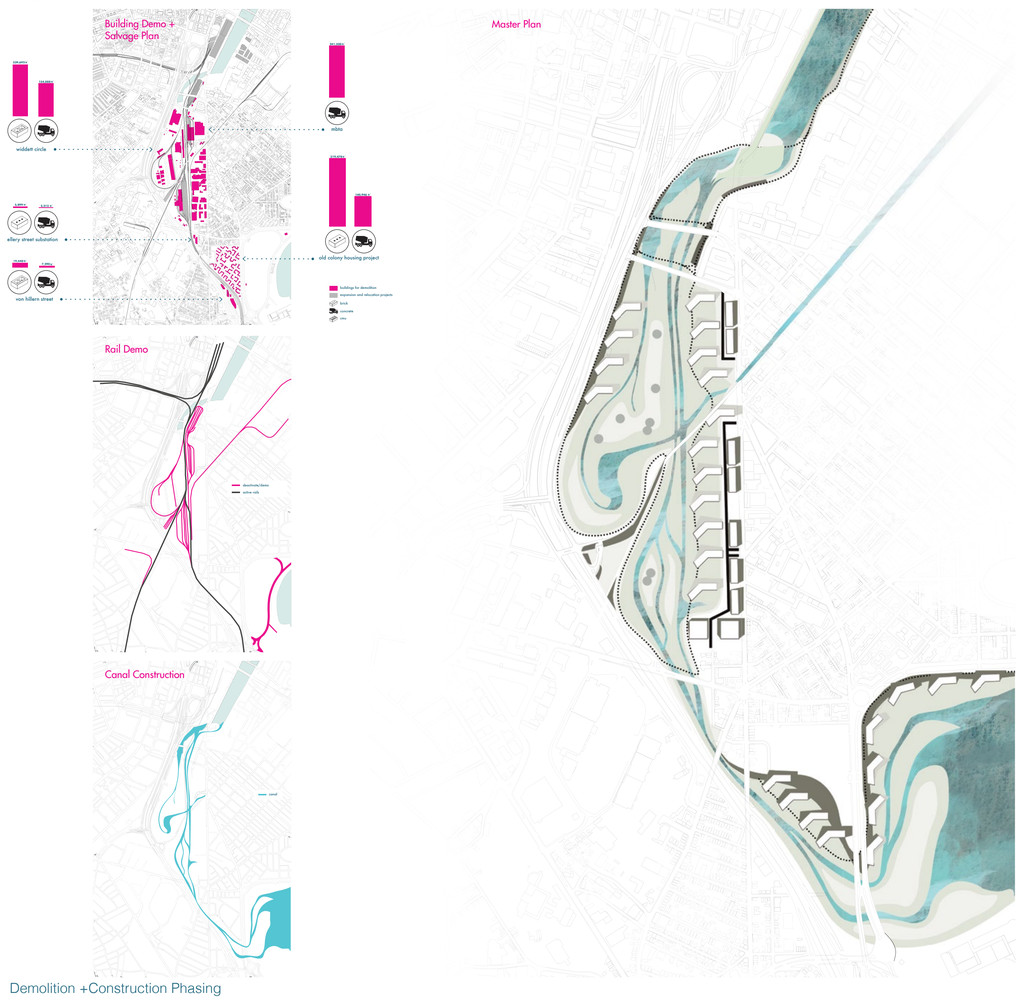
Against this threat, a simple grass may hold the key to survival. Cordgrass (spartina sp.) is the keystone species of the salt marshes that once lined the pre-urbanized Atlantic coast. Its unique ability to thrive in polluted salt water and serve as the foothold for productive and protective ecosystems can be capitalized on to re-create Boston's at-risk infrastructural zone into a resilient eco-district. Architectural interventions designed to foster rapid sediment accrual and idealize growth conditions will permit the plant to build its own land in prescribed corridors that will effectively function as a system of self-growing sea walls whose heights will always preempt those of the rising seas. Within one hundred years this system of ecological infrastructure will have grown to defend Boston's most vulnerable areas from rising tides while creating an expansive civic amenity and a responsible, resilient way of life.

Projected 2100 Sea Level Impact with Primary Infiltration Points

What's at Risk?

- **30,000** Jobs
- **100,000+** Residents
- **$80 Billion** Real Estate Value
- **375,000** Vehicles
- **100,000+** Daily Train Rides

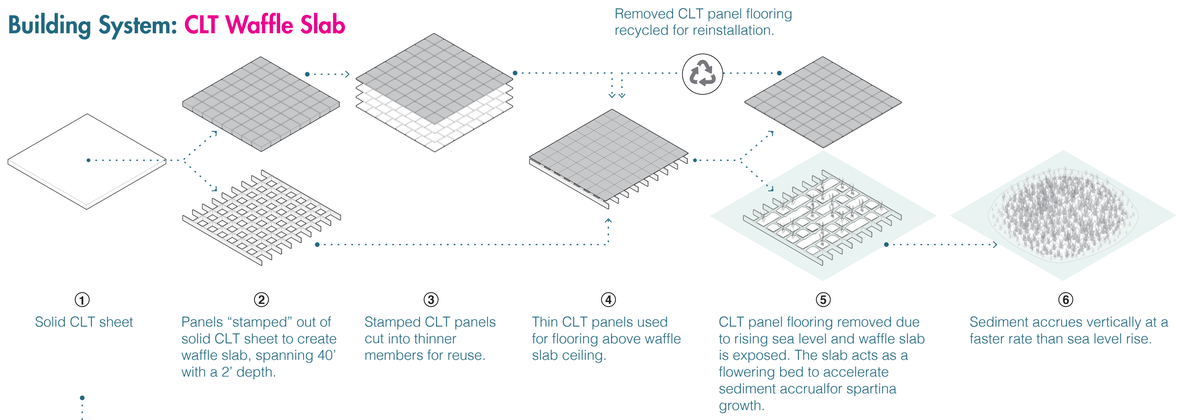
Results



Demolition +Construction Phasing

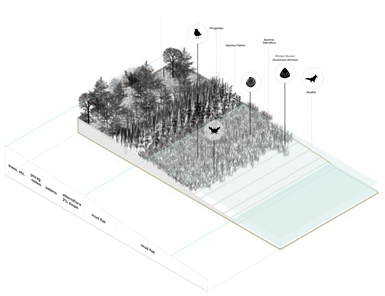
Approach

Building System: CLT Waffle Slab

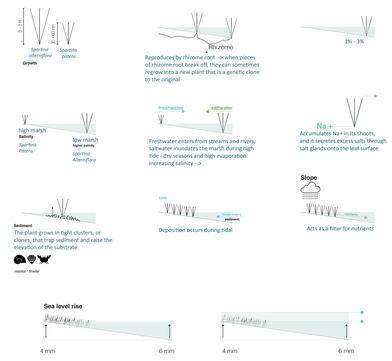


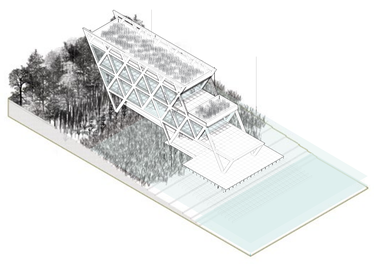
Landscape: Spartina (cordgrass)

Building System + Landscape = Optimized Performance



Spartina Ecotone + Properties





Integrated System

Impact

+ The creation of a 21st- and 22nd-century **performative landscape network** akin to Frederick Law Olmsted's Emerald Necklace

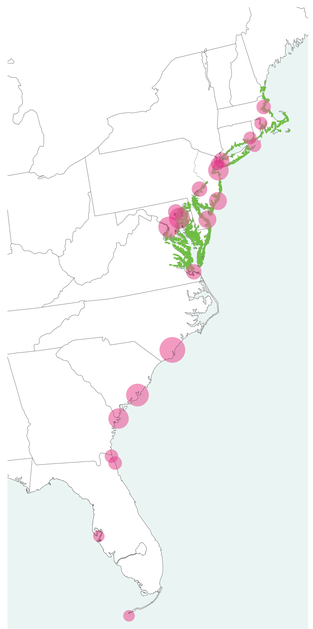
+ A **resilient, beautiful, and ecologically sustainable infrastructure** for managing sea level rise in Boston and beyond

+ The potential to **reinvent the Atlantic Coast** by implementing a **replicable and deployable combination of ecological and building systems**

The most vulnerable cities in the US:

Baltimore, MD	New York, NY
Houston, TX	New Orleans, LA
Jacksonville, FL	Philadelphia, PA
Los Angeles, CA	Portland, OR
Miami, FL	St. Petersburg, FL
Newark, NJ	Tampa, FL

+ Permanently effective coastal barrier capable of **saving untold lives and billions in damages**



Atlantic Coast Impact Zones + Intertidal Marshes