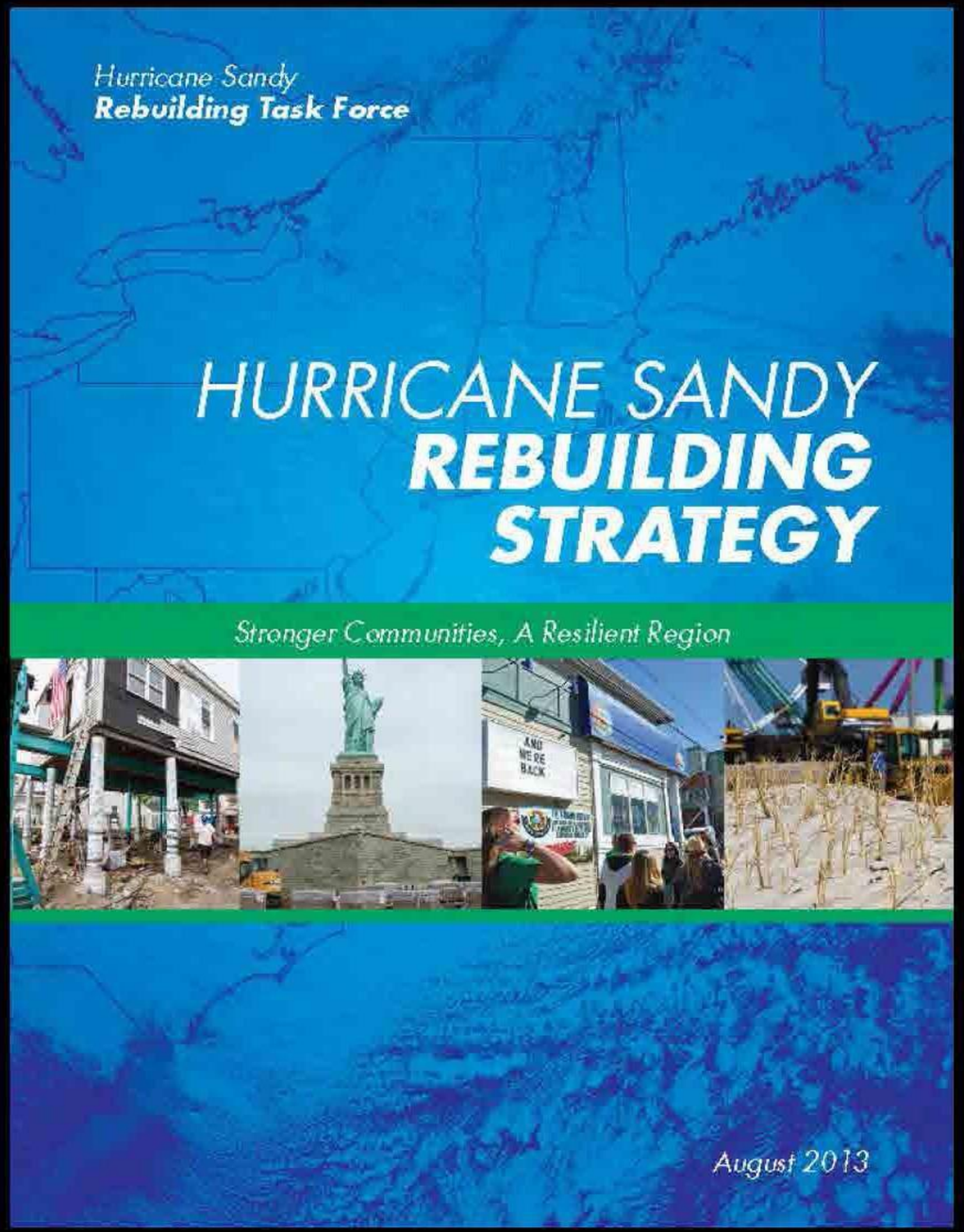
DESIGNING FOR RESILIENCE
THE LIVING BREAKWATERS



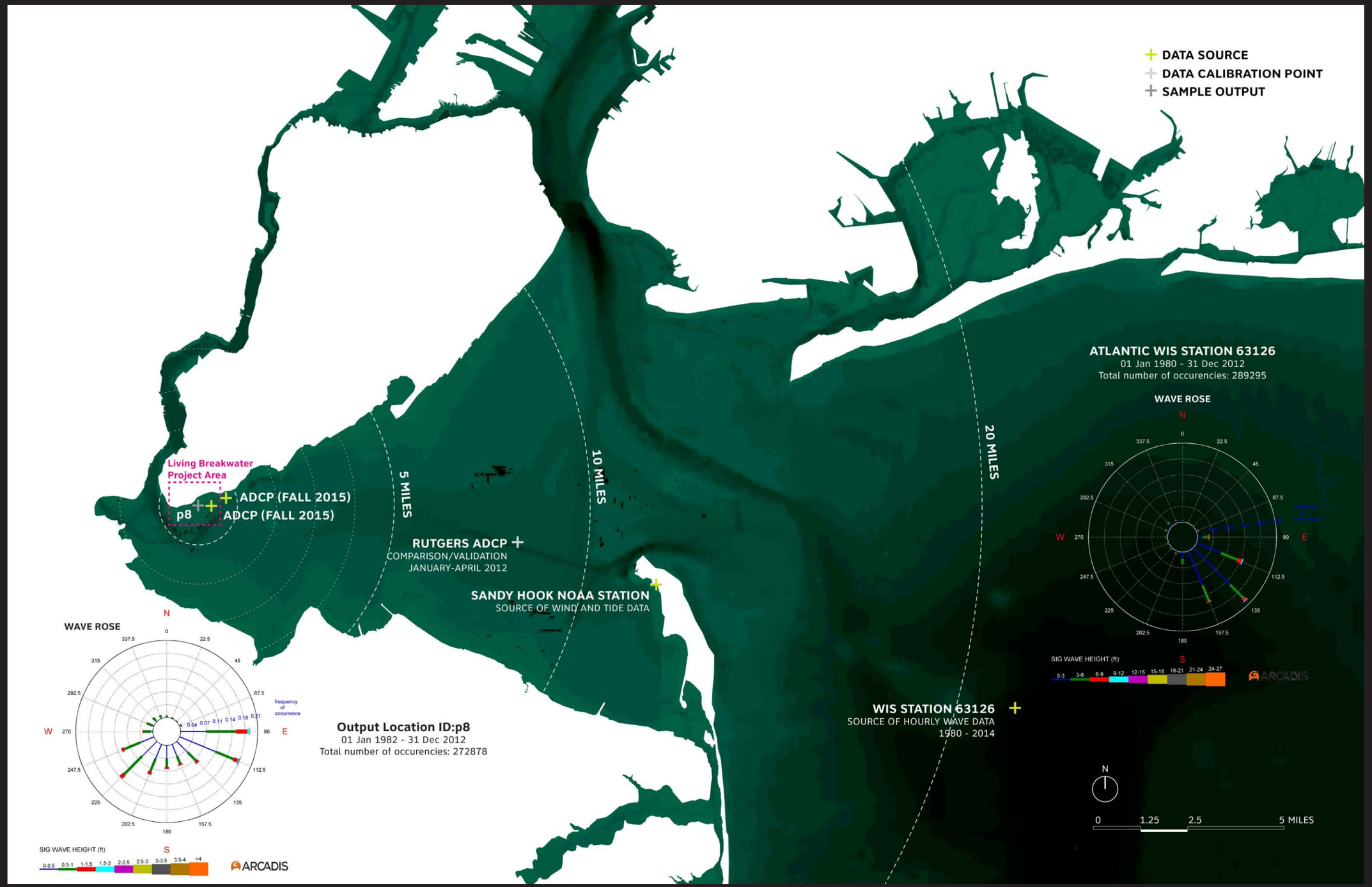
REBUILD BY DESIGN

"Climate change is presenting unprecedented threats to communities across the country. Rebuild By Design is a model for how we can use public-private partnerships to spur innovation, protect our communities from the effects of climate change, and inspire action in cities across the world."

—

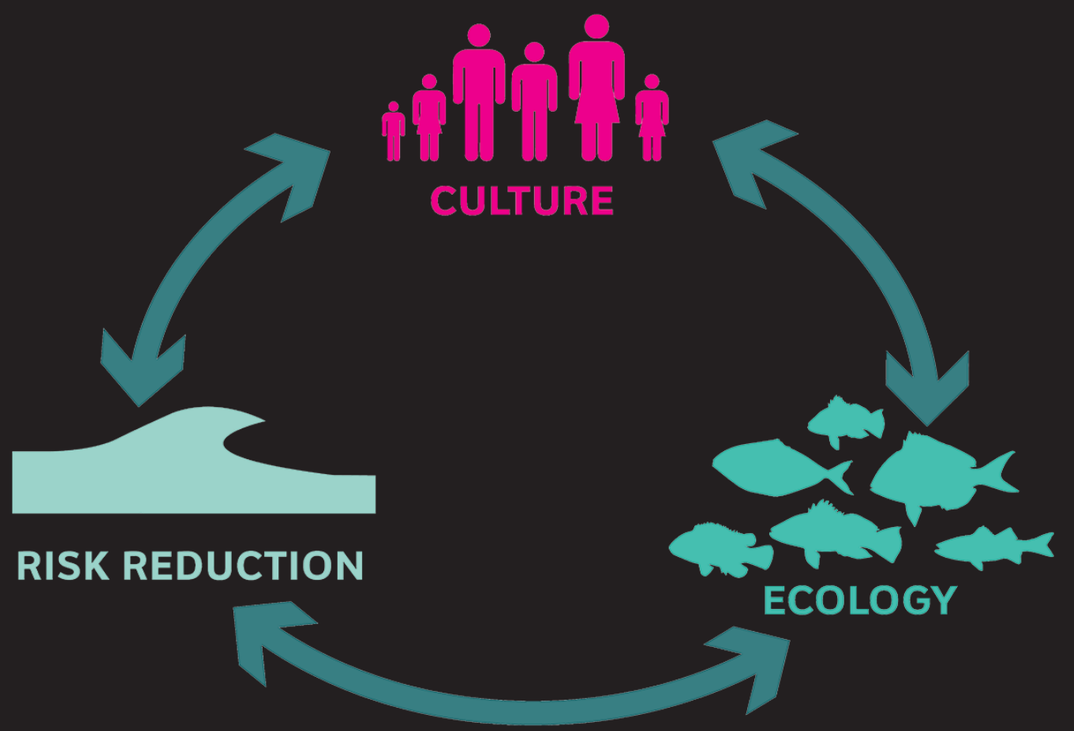
Shaun Donovan
Chair of the Hurricane Sandy Rebuilding Task Force
Secretary of the Department of Housing and Urban Development

PROJECT SITE



PROJECT GOALS:

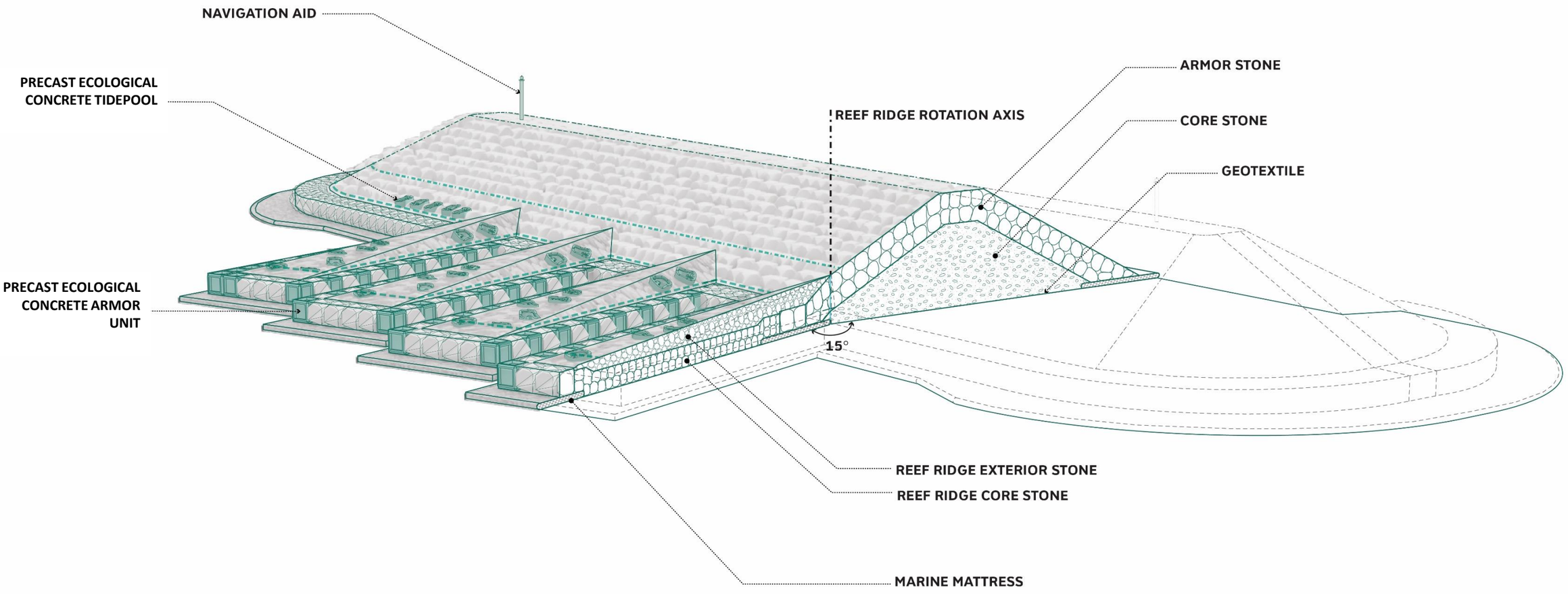
- **Reduce Coastal Risk (erosion + Storm waves)**
- **Enhance Ecosystems (near-shore & shoreline habitats)**
- **Foster Social Resilience (education, stewardship, public water access)**



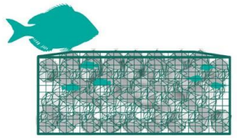
PROJECT ELEMENTS

RISK REDUCTION + HABITAT CREATION

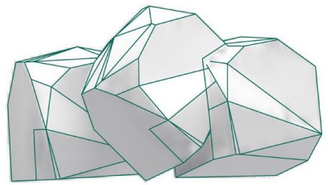
ANATOMY OF A BREAKWATER



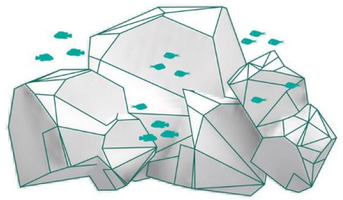
INTERNAL CORE STONE



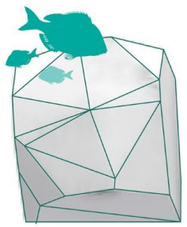
MARINE MATTRESS



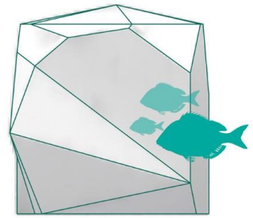
REEF RIDGE CORE STONE



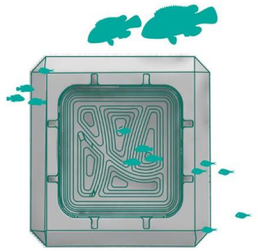
REEF RIDGE EXTERIOR STONE



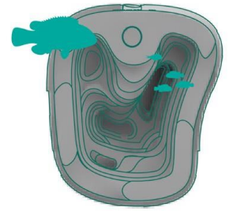
STONE ARMOR UNIT



STONE TOE ARMOR UNIT



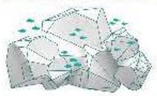
PRECAST ECOLOGICAL CONCRETE ARMOR UNIT



PRECAST ECOLOGICAL CONCRETE TIDEPOOL

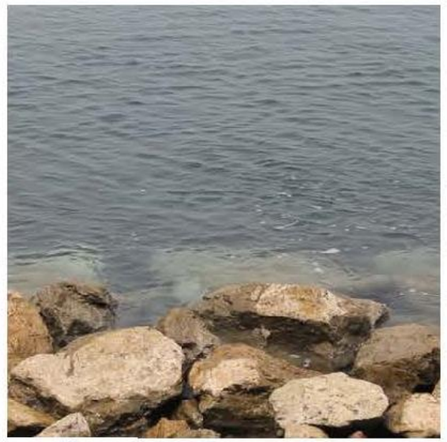
BREAKWATER MATERIALS

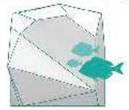
GEOTEXTILE



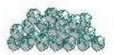
REEF RIDGE EXTERIOR STONE

STANDARD ARMOR STONE





TOE ARMOR STONE



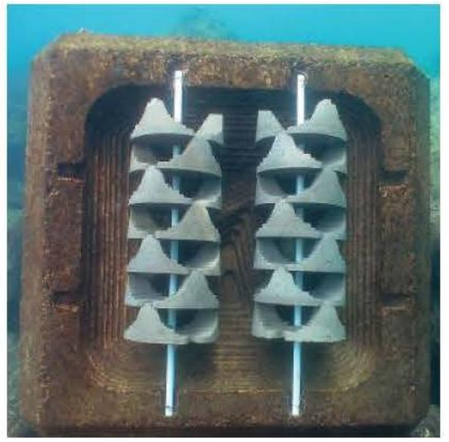
CORE STONE

MARINE MATTRESS

REEF RIDGE CORE STONE

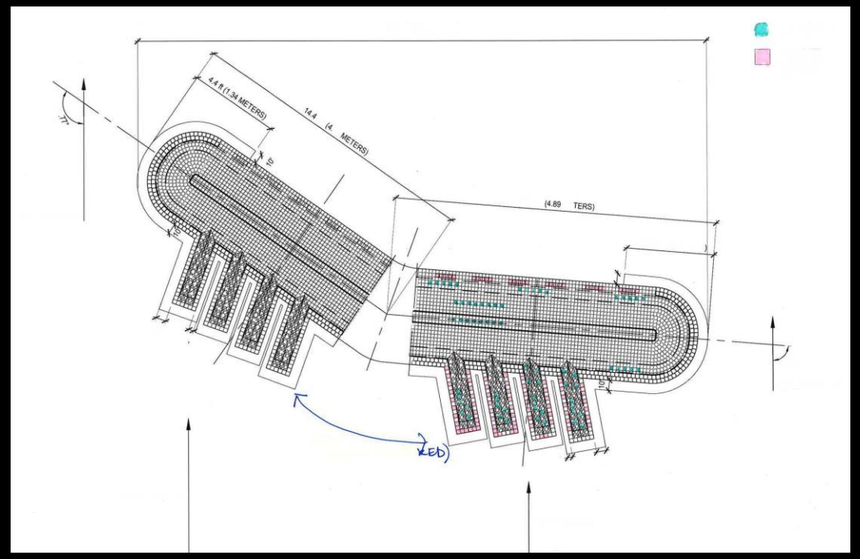
PRECAST ECOLOGICAL CONCRETE ARMOR UNIT

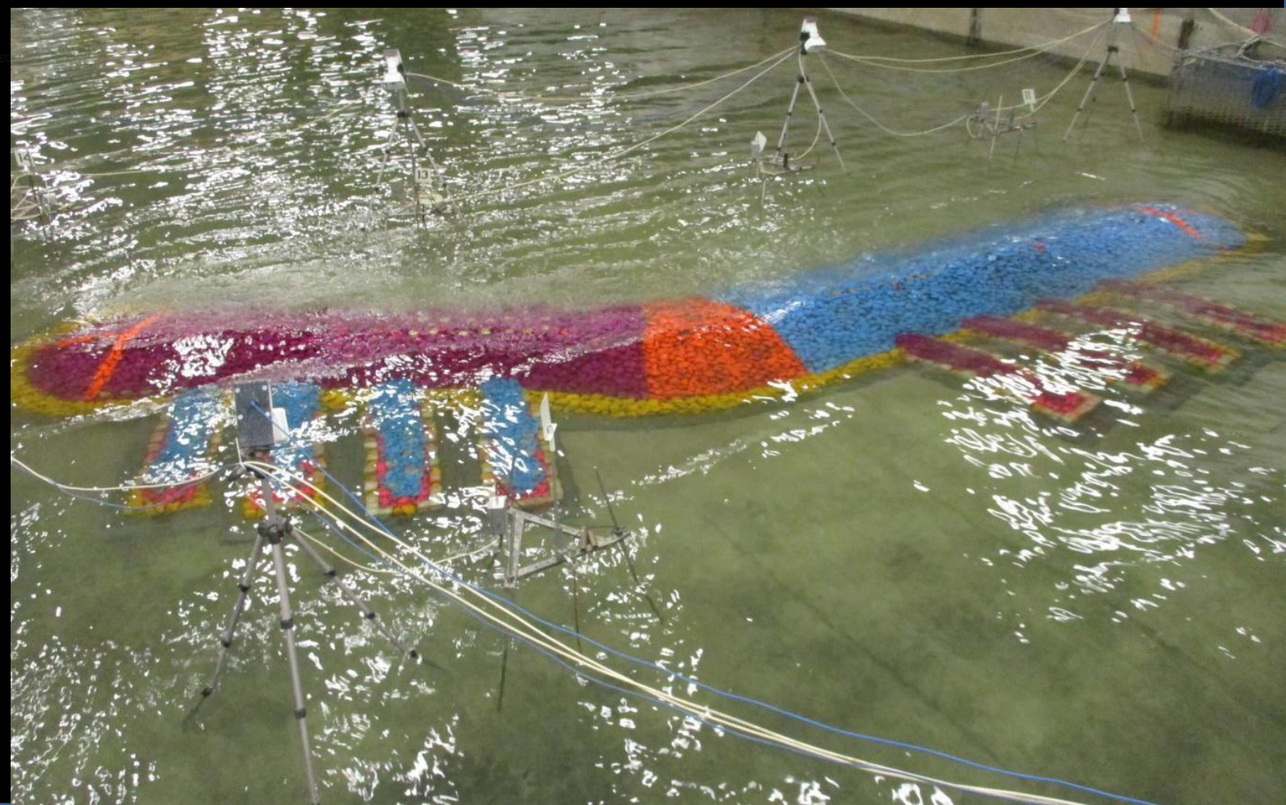
PRECAST ECOLOGICAL CONCRETE TIDEPOOL



PRECAST ECOLOGICAL CONCRETE INSERTS

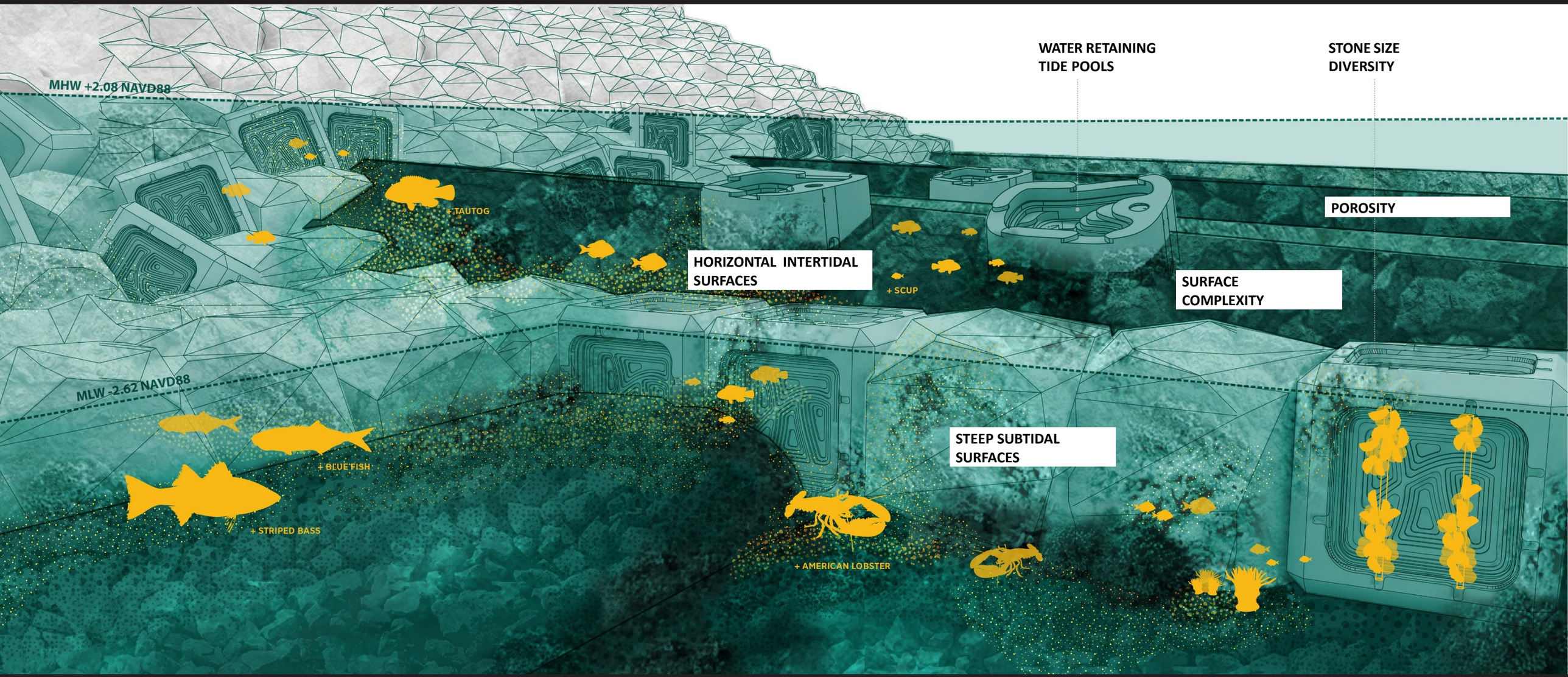
PHYSICAL MODELING





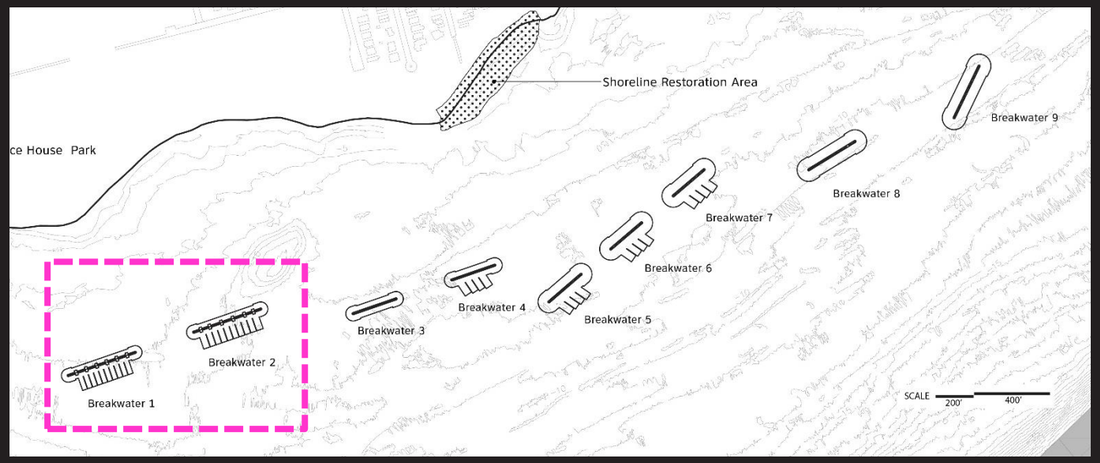
STRUCTURE & HABITAT

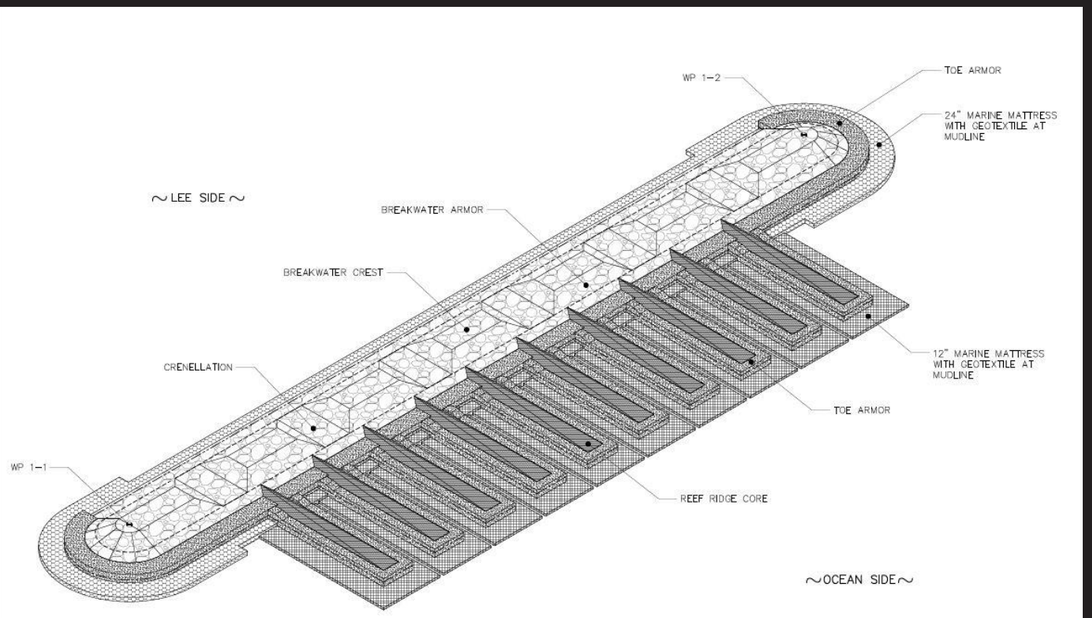
STRUCTURE & HABITAT

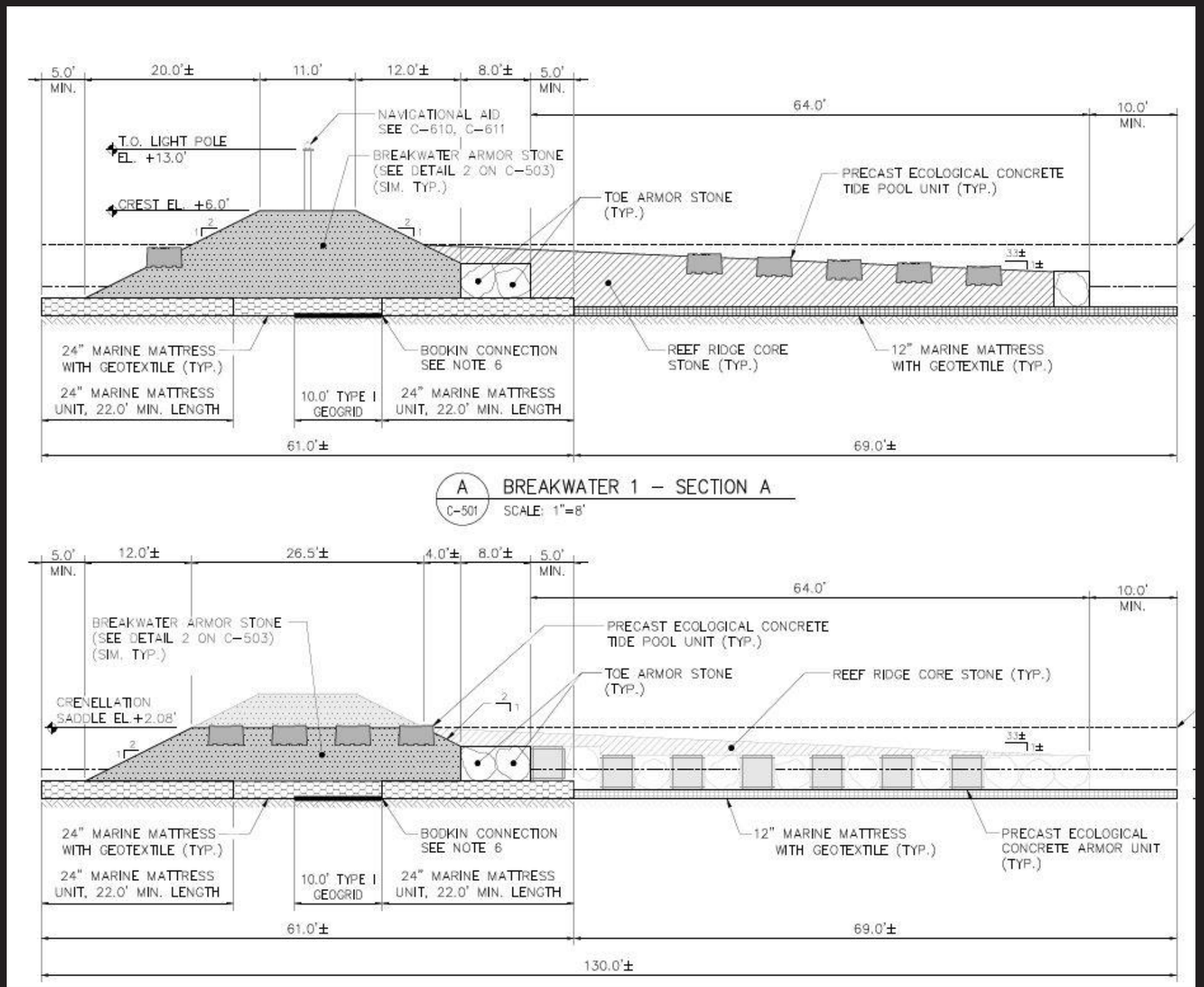


BREAKWATER TYPE 1:

LOW CRESTED + CRENELLATIONS

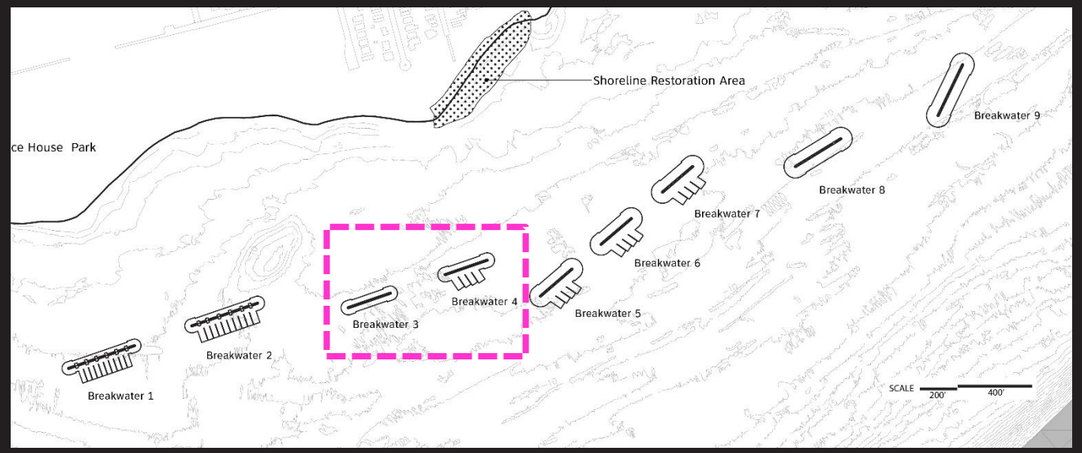


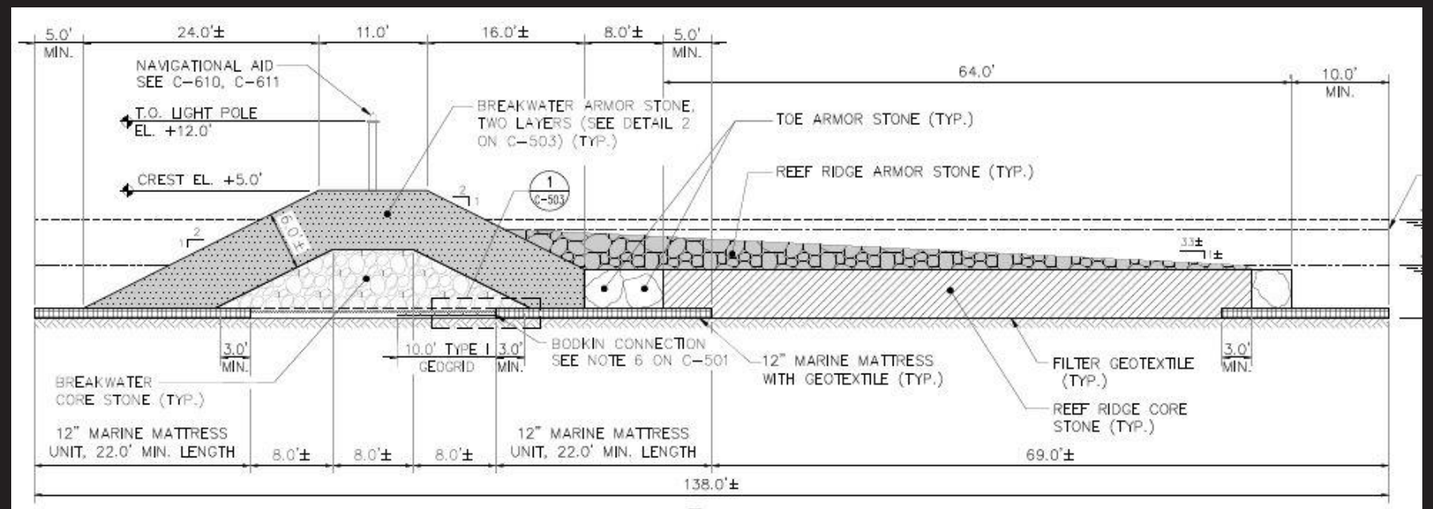




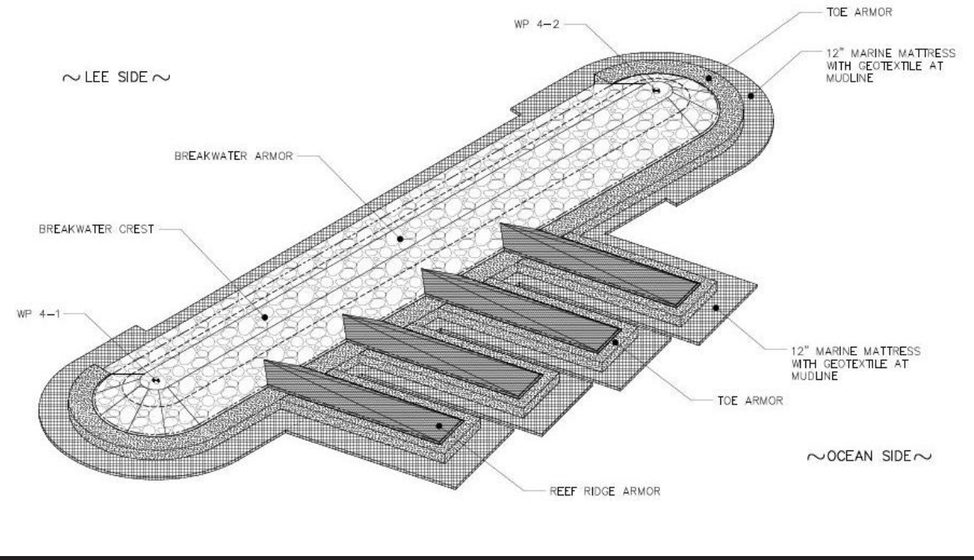
BREAKWATER TYPE 2:

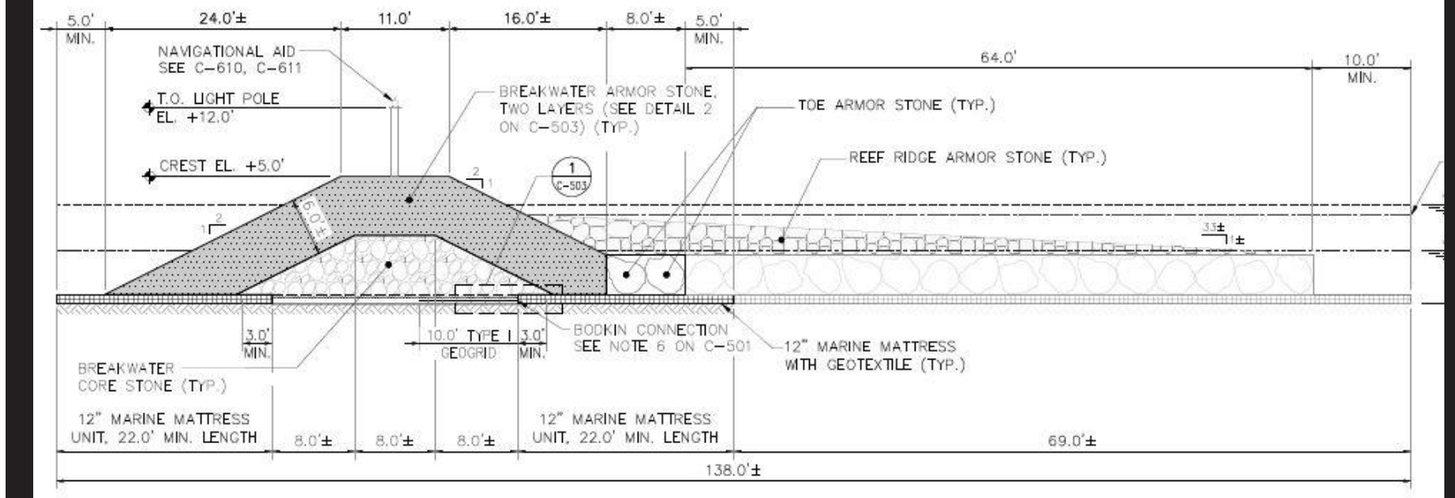
LOW CRESTED





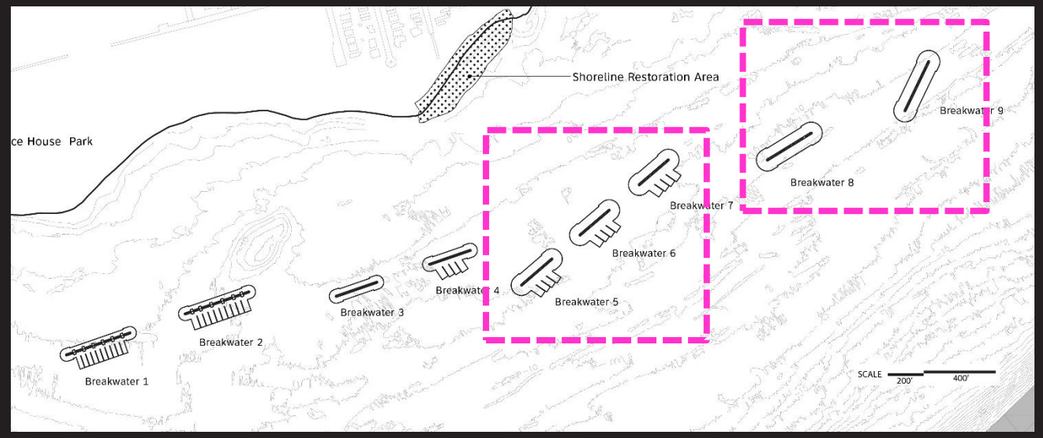
A C-504 BREAKWATER 4 – SECTION A
SCALE: 1"=8'

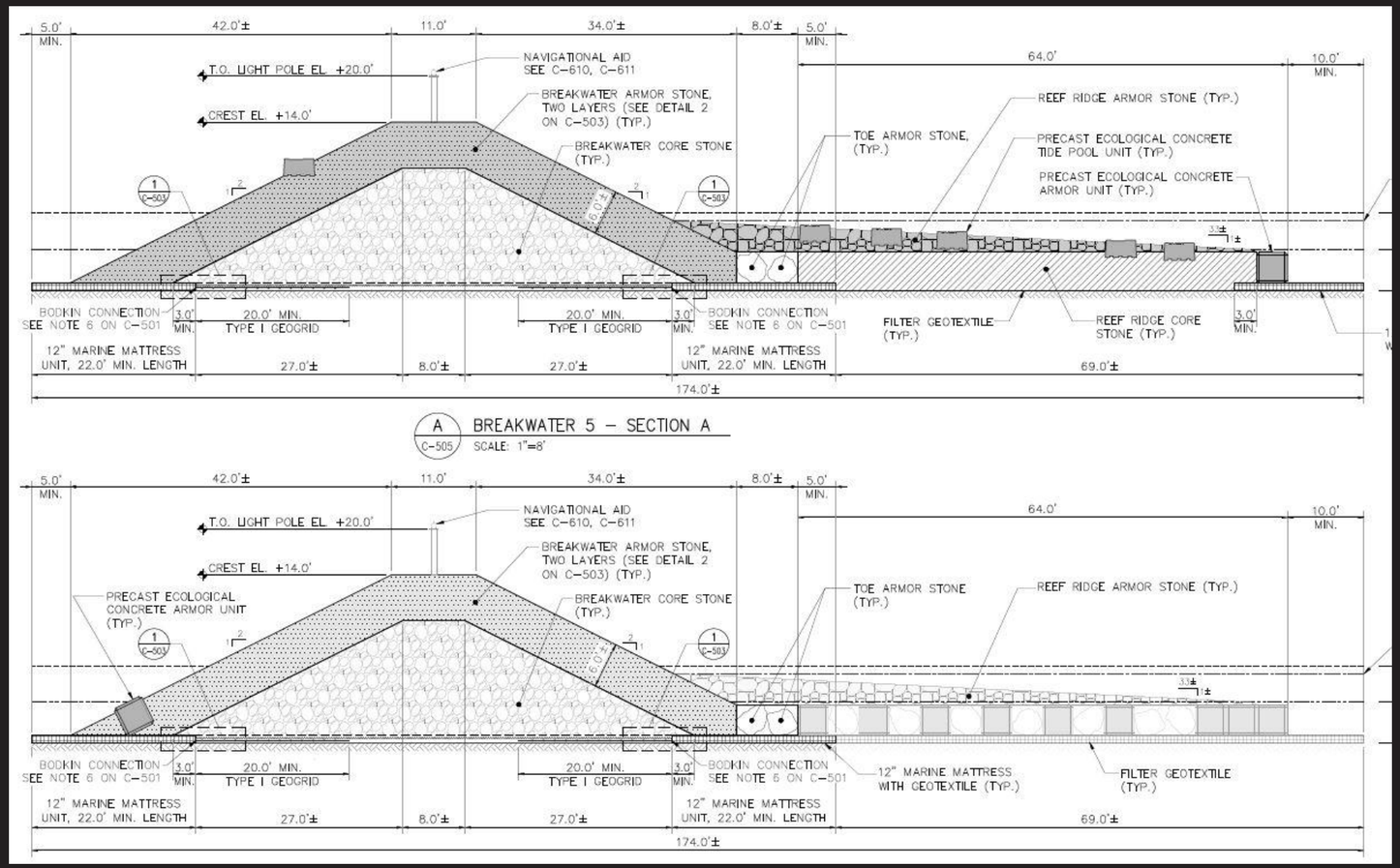


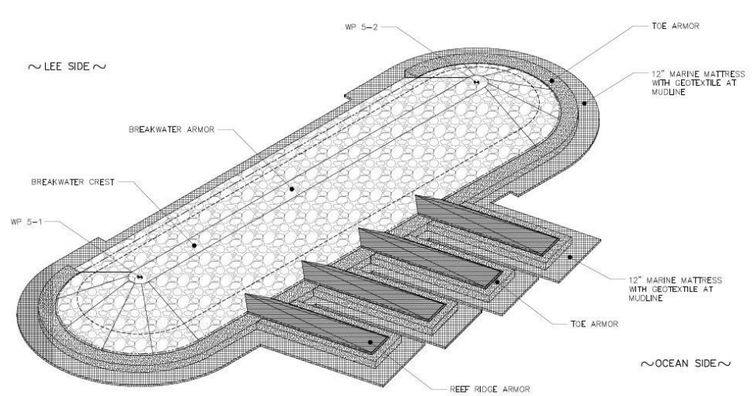


BREAKWATER TYPE 3:

HIGH CRESTED







THANK YOU!