Preparing a Historical Site for Sea-Level Rise

Project Summary: Combating current flooding and preparing for future sea-level rise in a century old neighborhood while preserving the historical aspects.

Project name: Tidewater Rising Resiliency Design Challenge

Location: Norfolk, Virginia

Description: Beneath the roads of the historic Chesterfield Heights neighborhood of Norfolk lies the aging and drowning pipes that were designed to keep the neighborhood from flooding. The pipes are no longer capable of adequately draining floodwaters due to an eroded shoreline and sea-level rise.

Approximate cost: $900,000 not including creating a living shoreline.

Resource challenges addressed: This successful project design addressed eroding coastline, sea-level rise, nutrient pollution, and current flooding during rain events.

Key partners (public and private): Old Dominion University, Hampton University, Virginia Sea Grant, Wetlands Watch, Hampton Roads Green Building Council, Virginia Institute of Marine Science, and Hampton Roads Planning District Commission.

Solutions: Living shoreline to protect existing shoreline from erosion and expand ecosystem services; pervious pavers and cisterns distributed along key roads and intersections in the neighborhood; urban bio-retention systems with media-filled cisterns lining the street to collect and infiltrate rain water; “base-tern” system that uses basements as water storage cisterns; and a system for disconnecting the rooftop downspouts and directing water into a system of cisterns.

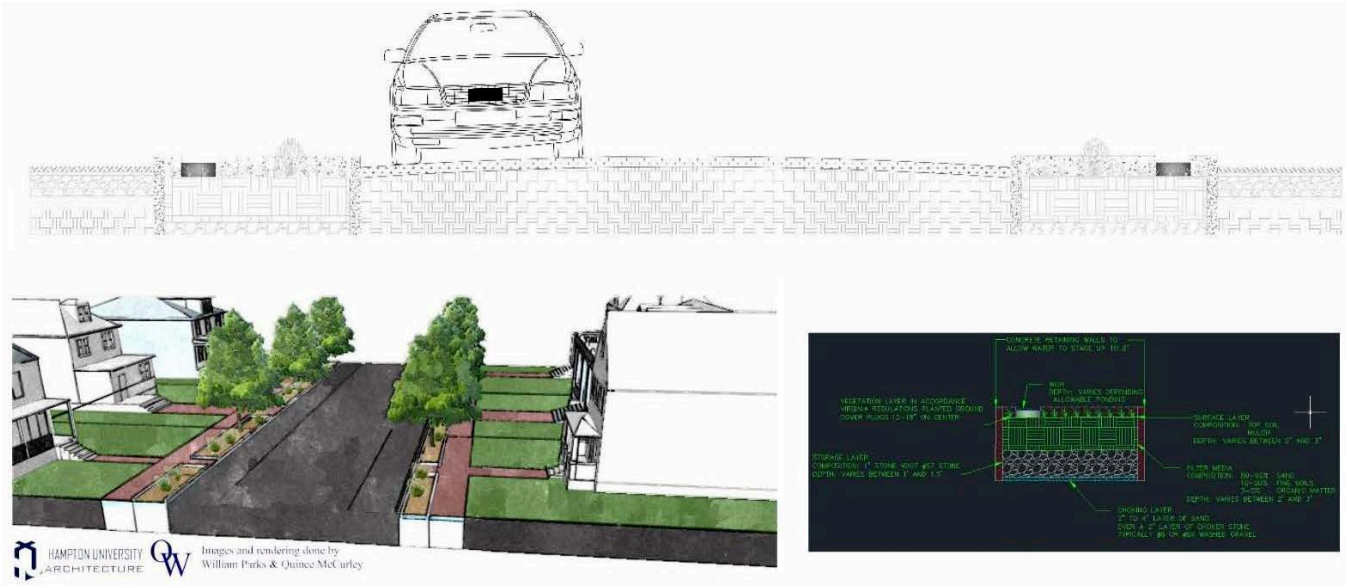

Figure1. Design schematics for urban bioretention systems with media-filled cisterns lining the streets of the Chesterfield Heights neighborhood. These systems will provide both flood control and significant stormwater pollution reduction.

Results and accomplishments: This successful design is estimated to reduce flooding in Chesterfield Heights by ninety percent while removing significant phosphorus and nitrogen from stormwater. It will also act as a model for other adaptation planning, design, and policy efforts along other coastlines in the state.

Website: http://vaseagrant.vims.edu/norfolk-neighborhood-makes-history-again-with-resiliency-design-plan/

Originally published on: 12 January 2016 by Chesapeake Bay Foundation