

## Introduction

The Prince Building Piers / Commercial Street Resiliency District (CSR) looks at the Prince Building in the context of the neighborhood and the city in the midst of climate change. Just as residents of a city are individuals within a collective community, our site is one structure, one site in a cohesive group of buildings that need to work in concert. Modifications to a single building are not enough to sustain a comprehensive response; the broader context is key. Expanding our view to Boston as whole, one understands that transformations require and depend on funding. The City is a communal body, but it is also inherently a financial body, needing to pay for the changes that are required as climate change progresses. Funding sources beyond the capacity of a condo association need to be identified in order to make the necessary investments to protect and improve our built assets. The rising waters are seen as an opportunity to transform our urban/water edge in a positive forward looking way. The Prince Building Piers proposes to create a new urban life over current Commercial Street and to design a mechanism to cover capital and maintenance expenses. Our particular solution in the North End draws on the history of piers to reimagine the transformation of the Prince Building as it advances toward the harbor. Looking at a broader context, the approach promises the opportunity of varying architectural, civil and landscape possibilities, providing valuable new housing stock, and protecting our historic buildings.

## Advance / Retreat

Boston has a history of reaching out to the water and increasing its contact with it. From filling in marshland to develop the Back Bay to extending finger-like piers into the harbor along our coast, we have a strong precedent for developing uses and interactions with water. With the challenges of climate change, it is appropriate to ask if the tendency to advance is in conflict with the apparent necessity to retreat from the threat of higher seas and perpetual flooding. Our proposal answers this query with an emphatic endorsement to advance development, increase density and create new uses for our threatened land; and to use this opportunity to generate sustained revenue for adoption of resiliency policies. We propose to transform the asphalt of Commercial Street to new housing, new landscapes and new civil infrastructure that protects the existing buildings, creating a neighborhood district in harmony with a rising sea.

## The Problem of Thinking Small

The challenge of adapting a single building to resist regular flooding is that there are very few resources available to help solve the problem at that scale. And if some buildings are made resilient and others are left vulnerable, it creates a public policy issue and an overall deterioration of the city's quality. Once we understand that a single building can only serve as a model for a replicable plan, it is clear that the solution to resiliency needs to involve a larger context. Working at the neighborhood level, the City can be in partnership with private entities to enable a viable and sustaining project to resist the negative impact of climate change.

### Teaming Up: Public / Private Partnership

How would a viable public/private partnership be structured, and where can we look for precedent? Fortunately, the City of Boston has several successful examples that serve as models for our proposal. The Charlestown Navy Yard utilizes a ground lease concept to maintain the public grounds in coordination with the National Park Service and Spaulding Rehabilitation Hospital. The Rose Kennedy Greenway provides well-maintained green spaces and public parks, funded in part by the revenues generated by new construction of apartment buildings and commercial spaces on the land once occupied by the Central Artery as part of a Business Improvement District (BID). In both examples, private entities benefit from beautiful landscape and curated activities, increasing the value of their investments, while the city benefits from revenue from property taxes and ground lease fees.

### Using a Ground Lease Model

Commercial Street is owned by the City of Boston. Prone to recurrent flooding in the next several decades, we assume the street will be closed. The closure of Commercial Street gives the city an opportunity to lease new development opportunities to private entities on its former footprint. These development rights help to fund the city's civil engineering and landscape effort to create a protective edge for all the buildings in the flood zone. The ground lease model is a flexible way for the city to protect its ownership rights as well as to custom tailor a revenue stream. The total income generated by this scheme reaches \$18M annually and continues to grow.

### Developing Sites

There are numerous buildings within the Commercial Street district that share similar characteristics with the Prince Building. We have identified 27 parcels that could be developed into a total of 1500 living units- a conservatively estimated value of \$1.2 Billion. Our site (parcel 14 on the plan) is among the smallest available footprints and, even at this smaller scale, the proforma indicates a viable and profitable investment.

### Replicating the Concept

The Prince Building has unique characteristics that are not shared entirely with other buildings in the district. Its height and unrestricted views of the water dictates a very porous response that maintains view and access to the outdoors. A higher density approach can be imagined for other buildings in the district- in fact each building demands a custom design to work harmoniously with the existing conditions. However the fundamental concepts of raising the entry level to the second floor, providing retail at that level and extending the construction over the closed Commercial Street, ensure that a cohesive and economically sustainable solution can be provided to the entire district.

### Zoning a New District

The problem of imminent flooding should be met with a strong call to action. A bold new zoning district will be created to encourage risk-takers and entrepreneurs to invest in the innovative housing type and dense commercial development proposed to fund the mandatory infrastructure changes. The zoning code will encourage smaller / denser units, agricultural roofs, living facades, greater height, affordable housing opportunities and require visually active retail spaces at the new ground plane. New construction will be elevated to allow emergency vehicle passage beneath.

### Landscaping a Sea Edge

Grassy berms that transition from the sea level up to the raised first level of the fronting buildings feature native grasses that tolerate marshy conditions, mown and tended at the higher points to encourage picnicking and lounging. A floating boardwalk serves as a transition between the berm and the sea, flanked by a constructed tidal garden / rain garden. This feature is designed to flood and drain on a daily basis, forming temporary pools among the large granite blocks and cobbles. This hard / soft approach provides a symbiotic and balanced edge to the changing water levels.

### Providing Public Art

If the sea level rises as predicted, many of the stone sea walls and piers that currently define the city's edge will become permanently submerged. In order to maintain awareness of them and to celebrate their role in the city's history, artists are commissioned to create underwater light parks that illuminate the structures with changing patterns and colors of light. Throughout the district, public art is commissioned to enliven the berms and walkways.

### Civil Engineering

One significant benefit of converting a roadway to a utility spine and water dam is that it is already an unobstructed pathway. The new walkable utility tunnel, built above the water line, provides flexible and maintainable systems that do not require access from above. The bike lanes and emergency vehicle routes are structured on top of the tunnel, and no excavation for future maintenance would be required through these surfaces. The continuous waterproofed concrete water dam simply follows the centerline of Commercial Street, providing an unbroken barrier for the entire district. The North End rises into a hill behind this structure, and the existing roads will connect to the new pathway system raised above the current street.

The same system extends along the piers. At the point where the system intersects the floating boardwalk, bridges are provided to allow the boardwalk to pass beneath. Utilities are carried in the substructure of the bridges.

### Transportation, Servicing and Emergency Access

With the closing of Commercial Street, it is vital to maintain a means for emergency vehicles and service vehicles to access each site. The raised bikeway is dimensioned and structured for emergency vehicle use and it meets the rising hill of the North End, integrating into its streets. A separate pedestrian walkway sits adjacent to the bikeway at the upper elevation, and a floating boardwalk defines the sea edge. This multi-modal approach to transportation meets the objectives of the city's transportation planning principles.

### Phasing

Implementation of the Commercial Street Resiliency District begins immediately with the legislative work required to define a new zoning district and determine property ownership lines. A simultaneous design phase for the civil infrastructure refines the feasibility and the costs of the construction. These phases are followed by identification of parcels and selection of developers through an RFP process. Construction of the water dam and utility tunnel occurs on the inner lanes of the street, while the outer lane remains active. After completion of the first phase of units, the outer lane of Commercial Street is converted into the grassy berm and floating walkway system.

### Impacting Existing Buildings

The idea of building in front of existing buildings, existing balconies and existing lines of view is controversial and meets with selective resistance. However, with rising heat and increased storms, the concept of the sheltered walkway between existing and new becomes desirable. Older units gain additional balcony space and views to the water are preserved. Direct access to new parklands on the berms bordering the building as well as to reimagined boardwalks along the water becomes highly popular. When balanced with the promise of dry lower levels funded entirely by other entities, the building owners agree to the scheme.

### Symbiosis- Micro Units and Prince Building

Commercial Street, now closed to vehicular traffic, is transformed into a pedestrian and bike way. Rising above the former street and connected to the Prince Building is a series of micro units set in a structure of balconies and greenery, facing the water. The sheltered walkways between the two buildings, old and new, protect the older north end structure and create new patios for the residents of the Prince Building. Cool air is drawn up along these walkways, mitigating the increasingly extreme summer heatwaves. Importantly, views are preserved from the original units to the water, through the open design of the micro units.

### Looking Back in 100 Years

The Commercial Street Resiliency District is a thriving area in which 200 year old buildings are preserved and protected from the impact of climate change. The edge looks different than it did yet one can see its history from the water. Perpetually generating revenue, the CSR District provides

excellent maintenance of its parklands and bikeways and curates public art and performances year round. Residents and visitors peer out into the harbor and see the illuminated outlines of the submerged seawalls from earlier times, reminding them of the forethought that went into protecting the North End a hundred years earlier. Similar Resiliency Districts developed in other vulnerable neighborhoods of Boston share the success story, albeit with different expressions and different characters appropriate to their context.