



Atlantic Wharf Sustainable Case Study

architecture
interior design
urban design

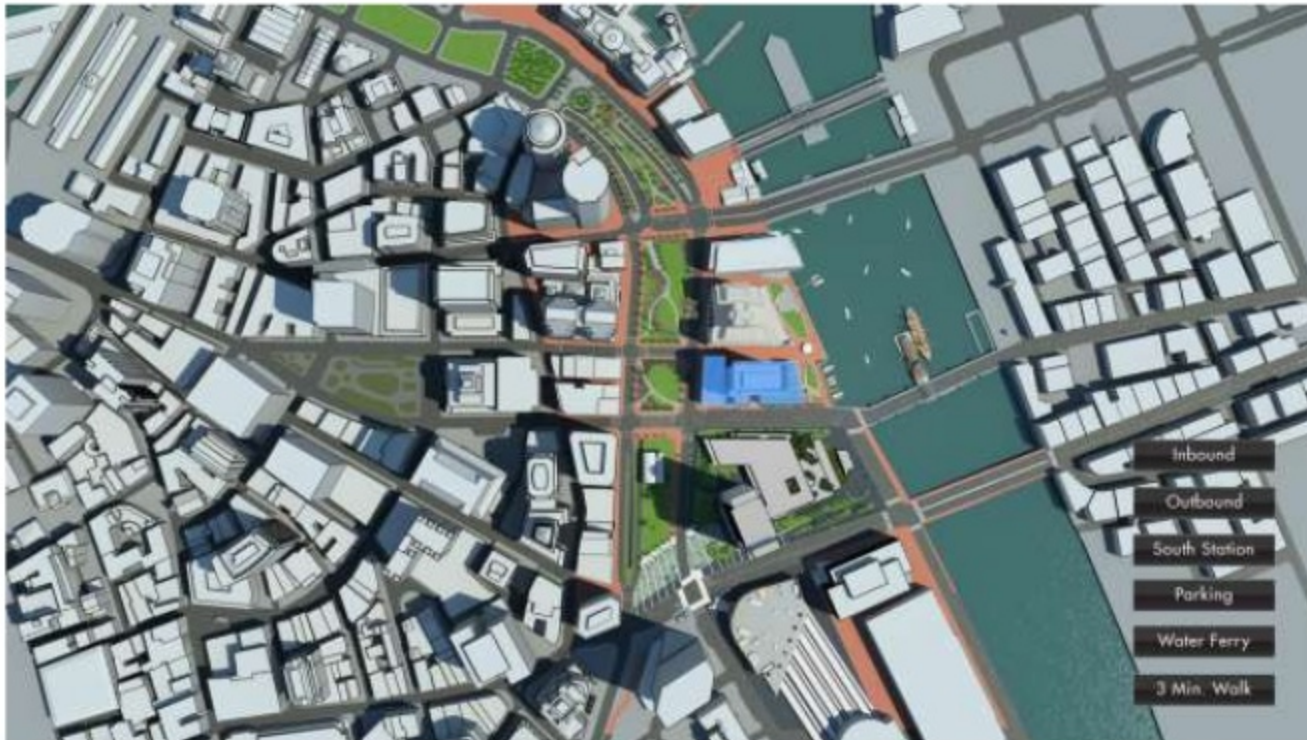
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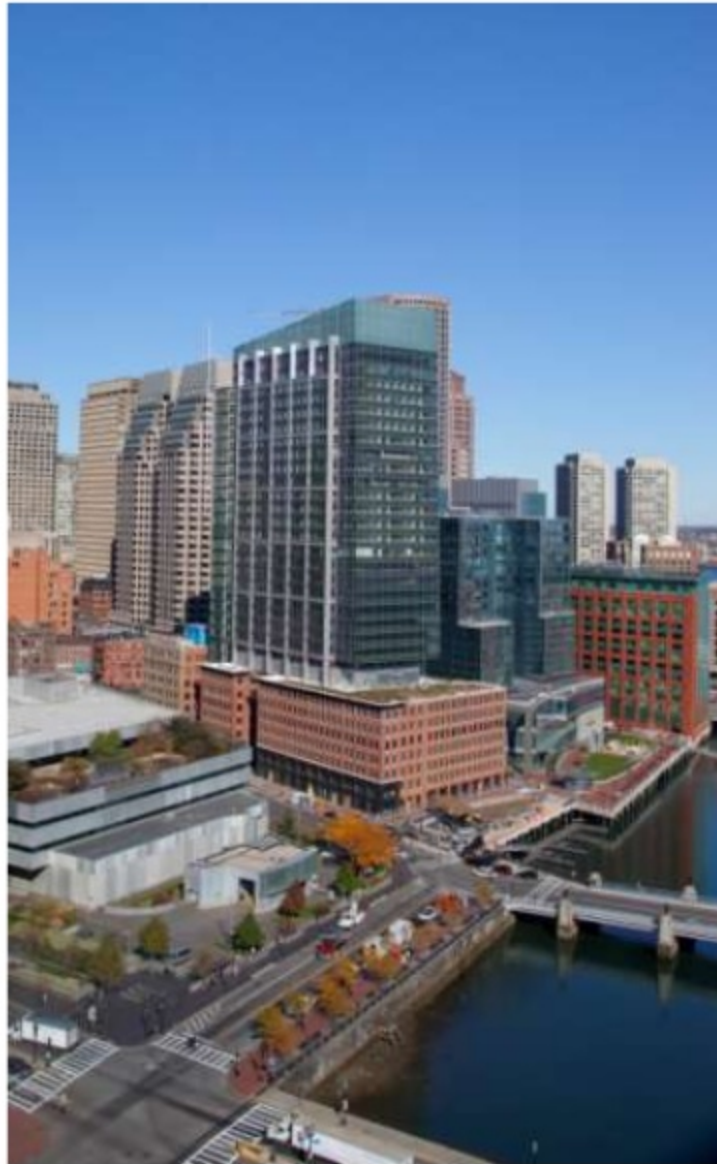
Boston Properties
Owner

Vanderweil Engineers
Sustainability Consultant

Urban Design

- Dense urban site at the entrance to Fort Point Channel neighborhood
- Proximity to downtown and major transportation nodes
- Waterfront activation required by Chapter 91 permitting



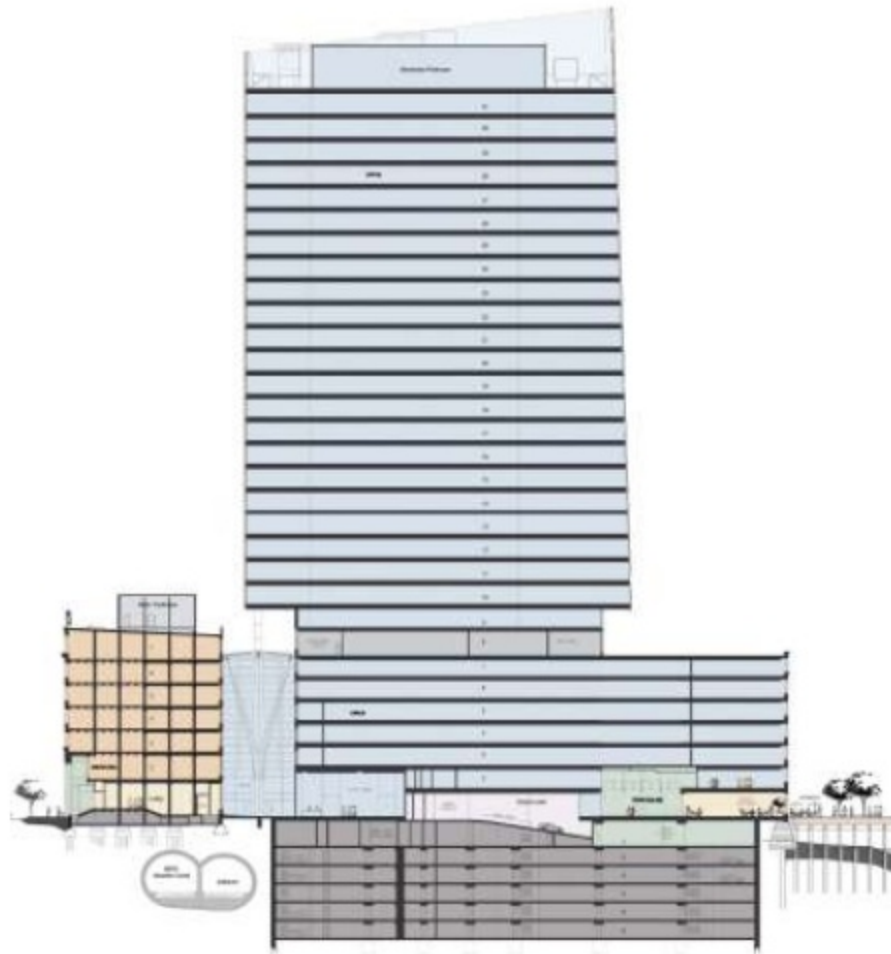


Complex Permitting Process

- Article 80 large project review
- Historic Approvals – Article 85, MHC, BLC
- Chp 91, MEPA & environmental approvals

Mixed-Use Program

- 1.1 mm sqf overall- Office, Residential, Retail, major Interior Public Spaces, below-grade parking and exterior Public Space





Preservation of Historic Architecture - Existing

- Full restoration of the historic 1899 Peabody and Stearns Russia Building and preservation of the GA and Tufts building facades to maintain the historic fabric at street level.
- The fully restored Russia Building will now house 86 luxury loft residential units.





Integration of Historic and New Architecture

- Design integration of modern glass enclosed office tower with low-rise historic structure
- Tower form recalls the maritime history of the site





Integration of Historic and New Architecture – Nelson Court

- Nelson Court was historically a streetway between buildings and now serves as the link between the new and historic architecture
- The 7-story glass-enclosed public space also serves as the office tower's main entry





Complex High-Rise Construction

- Up-Down Construction
- Hybrid Concrete Core and Steel Frame Tower
- Below-grade slurry wall garage



43 points - USGBC Pre-Certified Gold

Design Review Complete; Construction Documentation 95% complete

LEED – Core Shell Version 2.0 (2009) (2009)

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Sustainable Sites – 12 Points Achieved

POINTS	CREDITS	CREDIT NAME
yes	SSp1	Construction Activity Pollution Prevention
1	SSc1	Site Selection
1	SSc2	Development Density & Community Connectivity
1	SSc3	Brownfield Redevelopment
1	SSc4.1	Alternative Transportation: Public Transportation Access
1	SSc4.3	Alternative Transportation, Low-Emitting & Fuel Efficient Vehicles
1	SSc4.4	Alternative Transportation: Parking Capacity
1	SSc5.2	Site Development: Maximize Open Space
1	SSc6.1	Stormwater Management, Quantity Control
1	SSc6.2	Stormwater Management, Quality Control
1	SSc7.1	Heat-Island Effect: Non-Roof
1	SSc7.2	Heat-Island Effect: Roof
1	SSc9.0	Tenant Design & Construction Guidelines





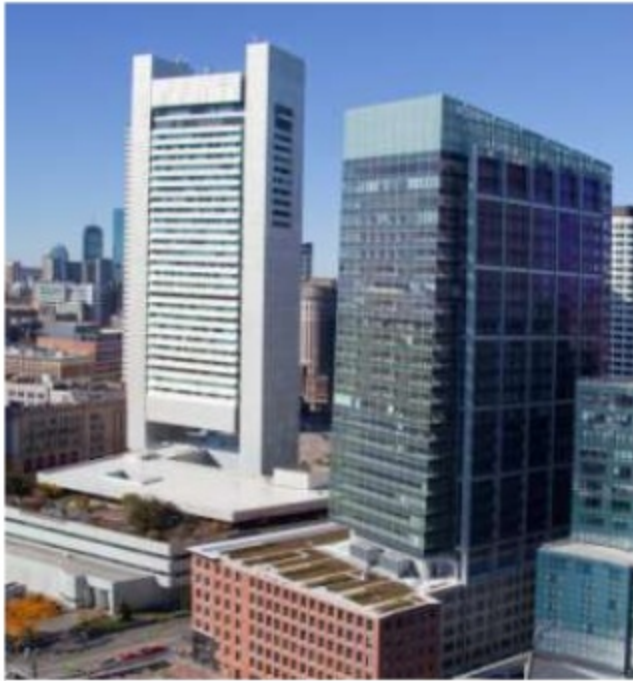
Development Density, Community Connectivity, & Public Transportation Access

- Constructing and renovating a building on a previously developed site in a dense community channels development to urban areas with existing infrastructure and preserves natural resources.
- Locating the project within 1/2 mile of a commuter rail and subway stations reduces pollution and land development impacts from automobile use



Storm Water Management

- Roof storm water run-off is harvested in a 40,000 gal. basement level retention tank and re-used in HVAC process water, thereby reducing demand on municipal water systems
- Atlantic Wharf Reduces the amount of process water used by 15% as compared to a typical building.
 - Typical Building Process Water Use: 6.98 gal/sf/year
 - Atlantic Wharf Process Water Use: 6.01 gal/sf/year



Heat Island Effect: Roof

- An 18,000sf vegetated green roof atop the Graphic Arts & Tufts Buildings utilizes native and adapted plantings to reduce the the heat island effect and minimize the impact on the micro climate and reduce storm water run-off
- Modular pre-planted grid system sits directly on roof membrane





Heat Island Effect: Non- Roof

- Atlantic Wharf features a 650-car parking garage on 6 levels below-grade constructed with a slurry wall perimeter and post-tensioned concrete slabs.
- 100% of parking capacity underground, thereby significantly reducing the heat island and drainage effects caused by on grade impervious hardscape surfaces.



Water Efficiency – 3 Points Achieved

POINTS	CREDITS	CREDIT NAME
Yes	WEc1.1	Reduce Irrigation by 50%
1	WEc3.1	20% Water Use Reduction
1	WEc3.2	30% Water Use Reduction





30% Water Use Reduction

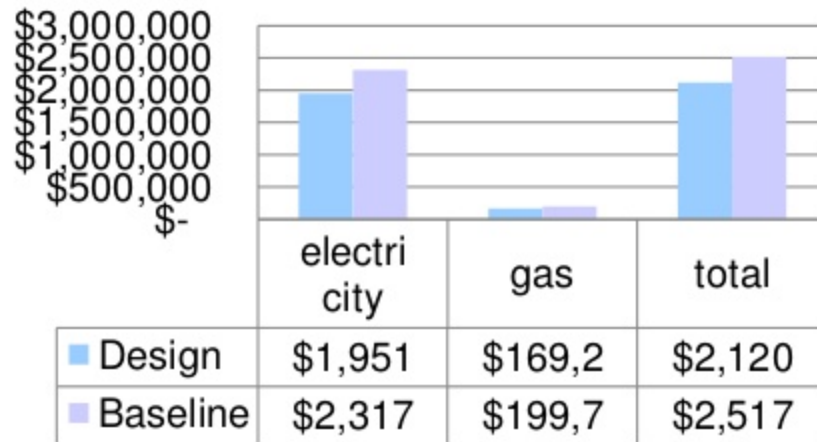
- 30% water-use reduction was achieved by utilizing low-flow and dual-flush plumbing fixtures in the core/shell design
- The combination of low-flow fixtures, stormwater re-use, and reducing irrigation water use by resulted in Atlantic Wharf reduced the domestic water use by **69%** as compared to a typical downtown office tower.
 - Typical tower domestic water use: 18 gal/sf/yeaf
 - Atlantic Wharf domestic water use: 5.5 gal/sf/year.

Energy and Atmosphere Efficiency – 7 Points Achieved

POINTS	CREDITS	CREDIT NAME
Yes	EAp1	Fundamental Building Systems Commissioning
Yes	EAp2	Minimum Energy Performance
Yes	EAp3	Fundamental Refrigerant Management
1	EAc1	Optimize Energy Performance
3	EAc2	1% Onsite Renewable Energy
1	EAc4	Enhanced Refrigerant Management
1	EAc5.2	Measurement and Verification: Terrant Sub-metering
1	EAc6	Green Power



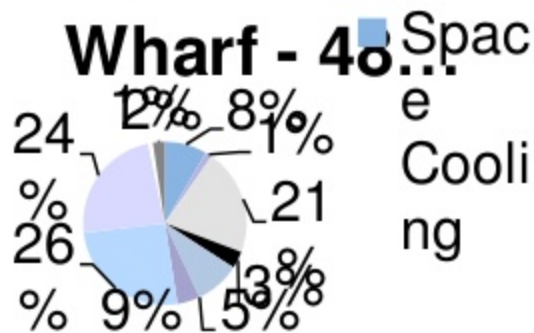
Atlantic Wharf Annual Energy Cost Savings

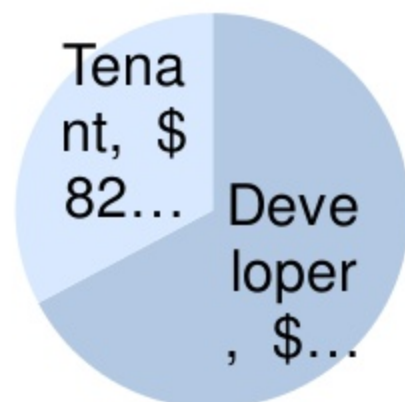


Optimize Energy Performance

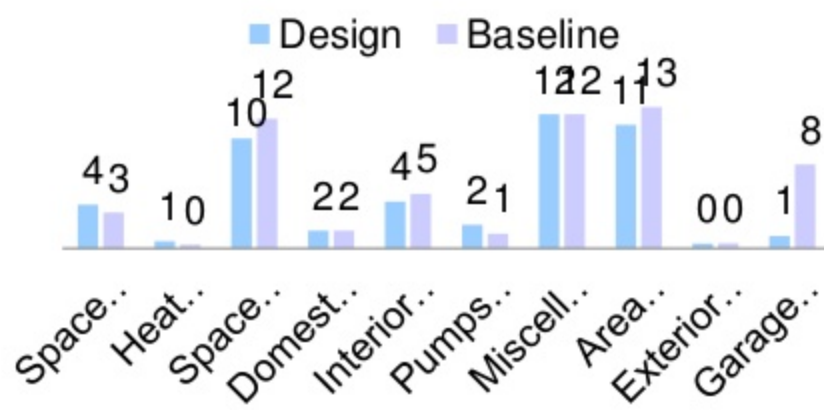
- Overall energy performance demonstrates approximately 16% energy cost reduction compared to ASHRAE 90.1 2004
- Atlantic Wharf is designed to use 42% less energy overall than comparable New England office buildings
 - New England Office Building Energy Use: 114.6 MBTU/sf/year (CBECS 2003)
 - Atlantic Wharf Energy Use: 66.7 MBTU/sf/year

Atlantic Wharf - 40...





Atlantic Wharf Energy by End-Use kBTU/SF/year



Optimize Energy Performance

- Core/Shell Project controls approximately 2/3 of annual energy use with tenant design and operations influencing the other 1/3
- Boston properties is responsible for approximately 22% of “developed-controlled” saving, while holding tenants neutral



Measurement & Verification

- Tenant sub-metering was implemented.
 - Major core systems and public spaces metered
 - Infrastructure installed for tenants to meter their own spaces
- Owner developed tenant sub-metering guidelines and will provide monthly reports prorated by tenants