Lower Manhattan Coastal Resiliency Project at The Battery

Key Terms

100-Year Storm: A storm that has a 1% probability of occurring in any given year.

90th Percentile Sea Level Rise Scenario: The high estimate for sea level rise projected by the New York City Panel on Climate Change.

Adaptable Design: Design strategies that can evolve or be adapted over time.

Climate Change: Climate change refers to a significant change in the state of the climate that can be identified from changes in either the average state or variability of weather and that persists for an extended time period, usually decades, centuries, or longer.

Datum: A fixed starting point for measuring an elevation.

Elevation: Height above a given level or datum.

Mean High Water (MHW): The average of all the high water heights observed of each tidal day at a tide station observed over the 19-year period known as the National Tidal Datum Epoch.

Mean Higher High Water (MHHW): The average of the higher high water height of each tidal day at a tide station observed over the 19-year period known as the National Tidal Datum Epoch.

NAVD88: The North American Vertical Datum of 1988, a datum established by the National Geodetic Service to standardizes vertical elevations.

New York City Panel on Climate Change (NPCC): The body of leading climate and social scientists charged with making climate change projections for the New York City metropolitan region.

Sea Level Rise: A consequence of climate change; sea level rise refers to the increase in global sea levels relative to land masses caused by a variety of mechanisms all related to the increase of greenhouse gases in the atmosphere.

Sea Level Rise Projection: A prediction for the increase in sea levels for a given time period based on different greenhouse gas emissions scenarios. The New York City Panel on Climate Change produces the latest localized science and provides projections for possible scenarios.

Storm Surge: The temporary increase, at a particular locality, in the height of the sea due to extreme meteorological conditions. The storm surge is defined as being the excess above the level expected from the tidal variation alone at that time and place.

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Tidal Range: The variation in daily sea level due to the gravitational pull of the sun and the moon.

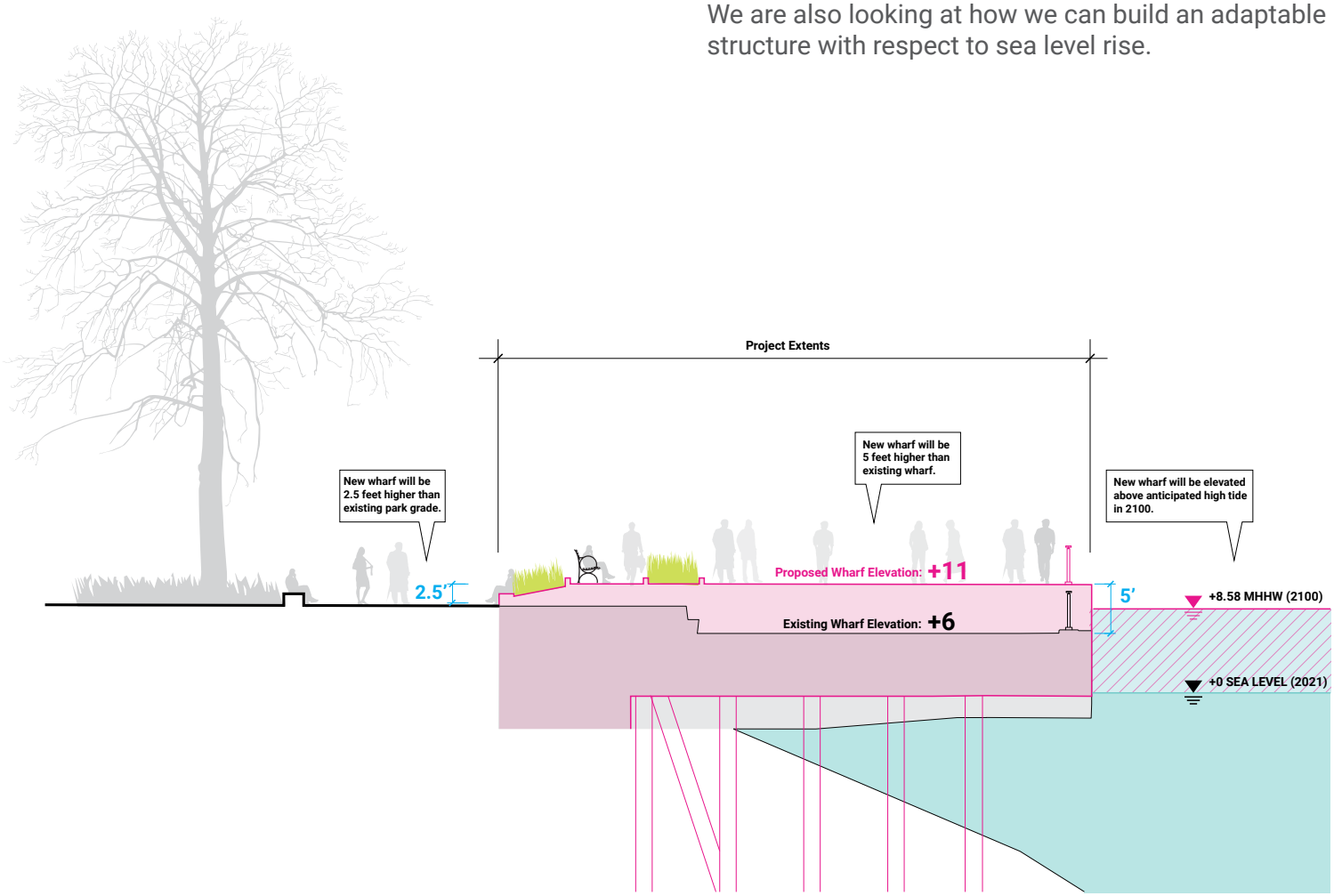
Tidal Inundation: Often an impact of sea level rise. Tidal inundation refers to the regular (often daily) flooding resulting from a higher tide on a coastal area.

Universal Design: Universal Design is the design and composition of an environment so that it can be accessed, understood and used to the greatest extent possible by all people regardless of their age, size, ability or disability.

Frequently Asked Questions

1. What is the project's design elevation?
The top of the wharf is currently positioned at Elevation +6 feet (NAVD88). Once rebuilt, the top of wharf will sit at Elevation +11 feet. This elevation is five (5) feet higher than its current position. See image below.

2. How scalable is the project in event the surges are higher than your current estimates?
Scientists with the New York City Panel on Climate Change have projected a range of potential sea level rise scenarios through 2100, and we are using a conservative 90th percentile projection for this project. Using projections in 2100 aligns with the useful design life of the wharf structure.
We are also looking at how we can build an adaptable structure with respect to sea level rise.



3. How will drainage work?
Drainage is an important aspect of the Battery project, and the team is just beginning to investigate an approach.

4. Will the park be completely closed during construction or closed in stages?
This project is focused on the wharf with limited activity in the park. The park will not be closed, and it is likely that only parts of the wharf will be closed at a time. We also intend to keep the boats and ferries operating during construction.

5. Will there be any construction done from the water?
That is a strong possibility, but we do not know for sure. Our team will evaluate this with our construction manager and the contractor we bring on board.

6. What sustainability measures are you considering?
We are evaluating a variety of sustainable design principles for this project, including sustainable materials, reducing embodied carbon, and sustainable stormwater management.

7. Who is the designer, and what is the delivery method, budget and timeline?
Stantec is the project designer, with a design and construction delivery method of design-bid-build. The budget is $165M, with an estimated construction start at the end of 2022/early 2023 and an 18-month to two-year construction time frame.

8. Where will the ferries that currently use the wharf operate from during construction?
Maintaining boat operations during construction is crucial, and we are in the process of determining logistics. We have been in touch with the National Park Service (who operate security screening at the Battery) and ferry operators to determine how we can maintain service.

9. Does the team have commitments to labor standards and prevailing wages?
Yes, we require our contractors to pay prevailing or union wages, which we monitor closely and require prior to contracting.

10. What about storm surge in other parts of the Park? Can water enter the site in other areas you are not considering?
Other projects in the Lower Manhattan Coastal Resilience portfolio will reduce the risk to the city from storm surge flooding beyond the park.

The approach at The Battery is to protect the park from daily inundation due to sea level rise in the long term, but elevating the wharf also protects against a 30-year storm in the near term. Other resiliency measures are being implemented to protect The Battery from storm damage should it be flooded.

Design and Construction Timeline