

NAVY EXPEDITIONARY COMBAT COMMAND **AREA DEVELOPMENT PLAN**



FINAL REPORT | APRIL 2021



Project Summary

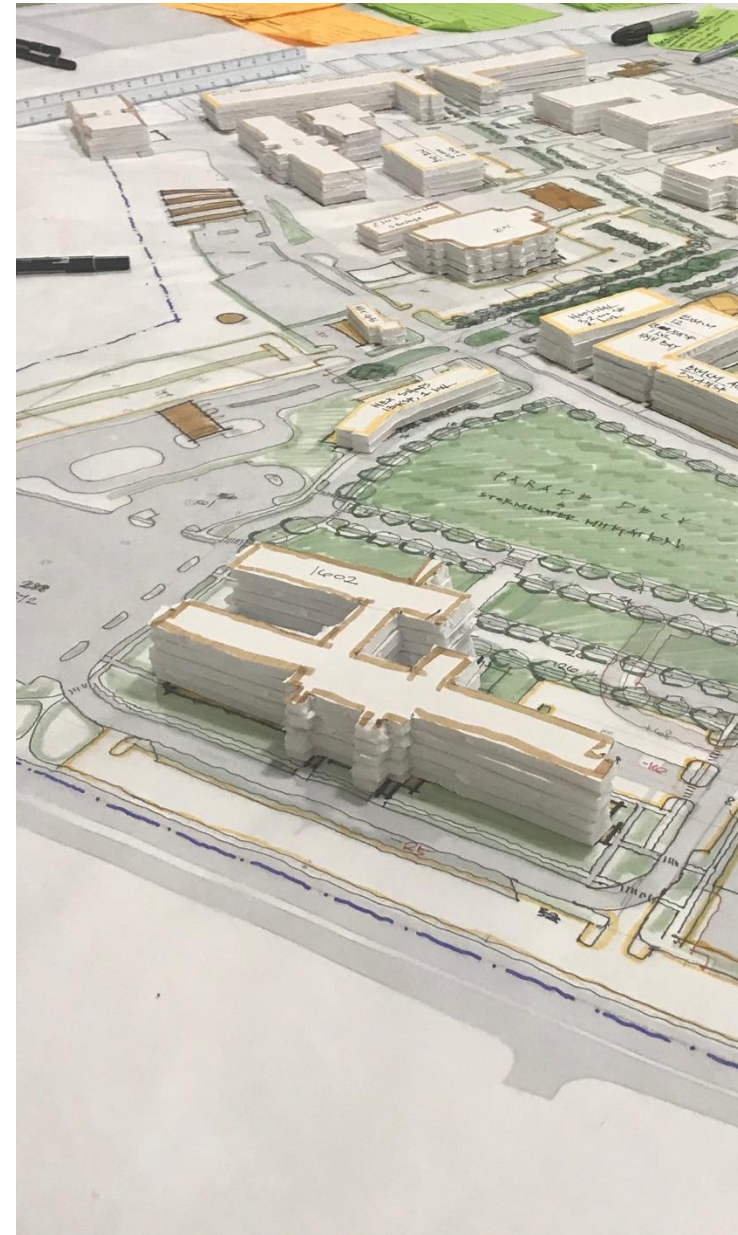
Navy bases are notoriously crowded, often in flood zones with overlaying storm surge areas, and require large amounts of industrial facilities and laydown spaces. Joint Expeditionary Base Little Creek-Fort Story (JEBLCFS) exemplifies those concepts. Naval Expeditionary Combat Command (NECC), which is currently located in 59 facilities at seven different locations across JEBLCFS, wanted to create a single campus with access to the water and piers, provide 770,813 gross square feet (gsf) of additional facilities, provide 9,385 square yard (sy) of laydown space, provide 4,075 vehicle and equipment parking spaces, retain stormwater on-site, and provide resilient buildings to combat the effects of sea level rise and stormwater.

The base welcomed the consolidation but also wanted neighbor units to remain on the west side and requested that NECC projects not be dependent on any neighbor unit projects. This meant that the implementation plan had to locate buildings on open land or delay the projects until an open space could be created through the implementation of other projects. All neighboring units were invited to the NECC Area Development Plan (ADP) Workshop and submittal reviews.

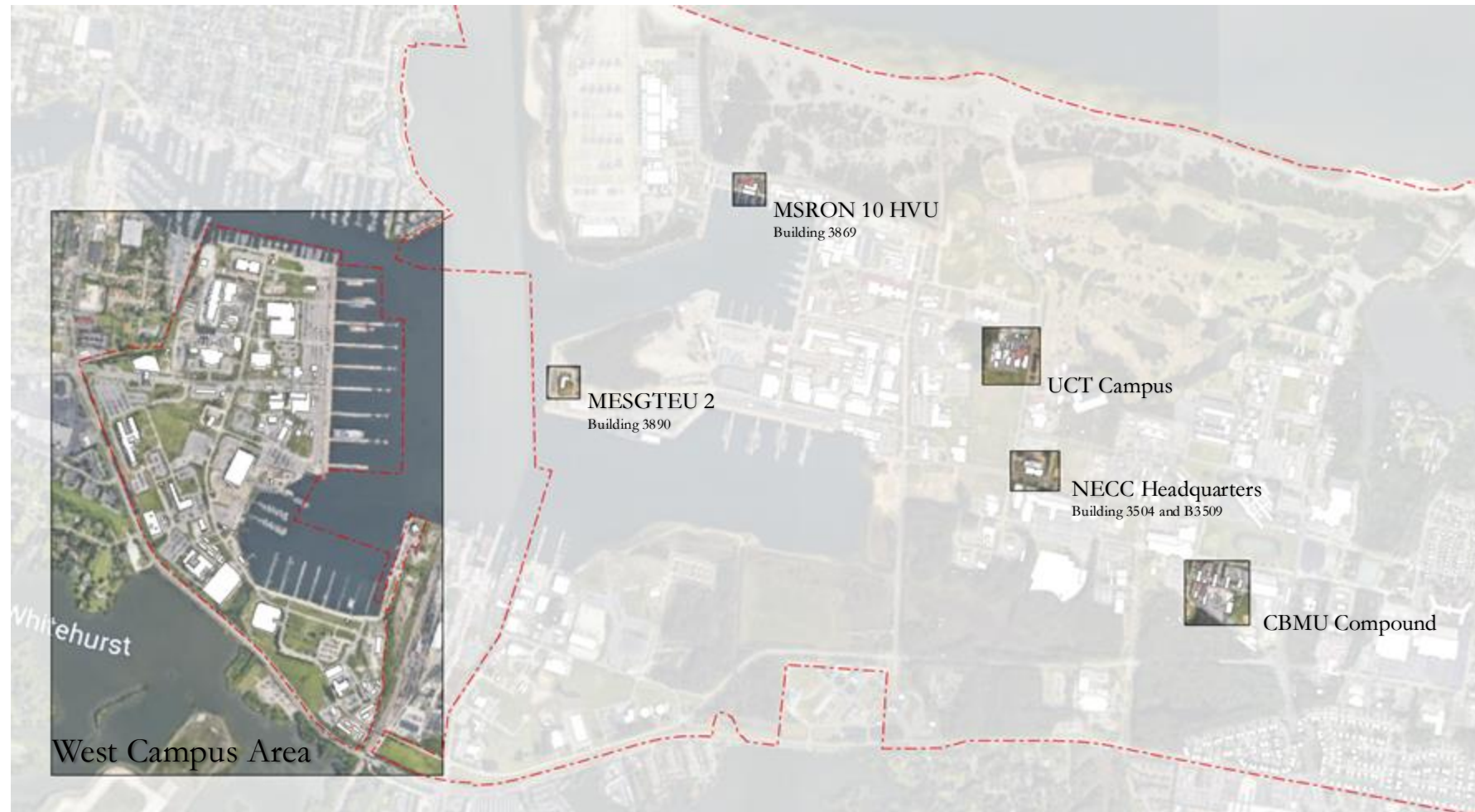
The result is a consolidated, resilient, walkable campus that provides xxx gsf of facilities plus xxx gsf of potential expansion space, provides 4,075 vehicle and equipment parking spaces using 25 percent less sf than traditional parking solutions, retained stormwater on the site, and provided resilient buildings that can hold up against the effects of sea-level rise and storm surge.

The proposed ADP NECC Campus Plan is oriented around a central green that serves as the central memorable location on the campus. The NECC Headquarters (HQ), a mix-use commercial facility, and fronts of other units face the green. Treed boulevards radiate from the green and serve as ways to get to other units. Almost all NECC units are industrial (boat maintenance, boat operations, exploded ordnance operations, and underwater operations). The units have a formal entry from the boulevards, boat, underwater workspaces on the first floor, support spaces (administrative, training, supply) on the second and third floors, and open to laydown and access to piers and waterfront from the rear of the facilities.

The multi-story buildings with floodable first floors, street sections that reduce parking area and increase water retention, and walkable campuses, can be applied to other Navy and Coast Guard bases to increase functionality, efficiency, sustainability, and resiliency.

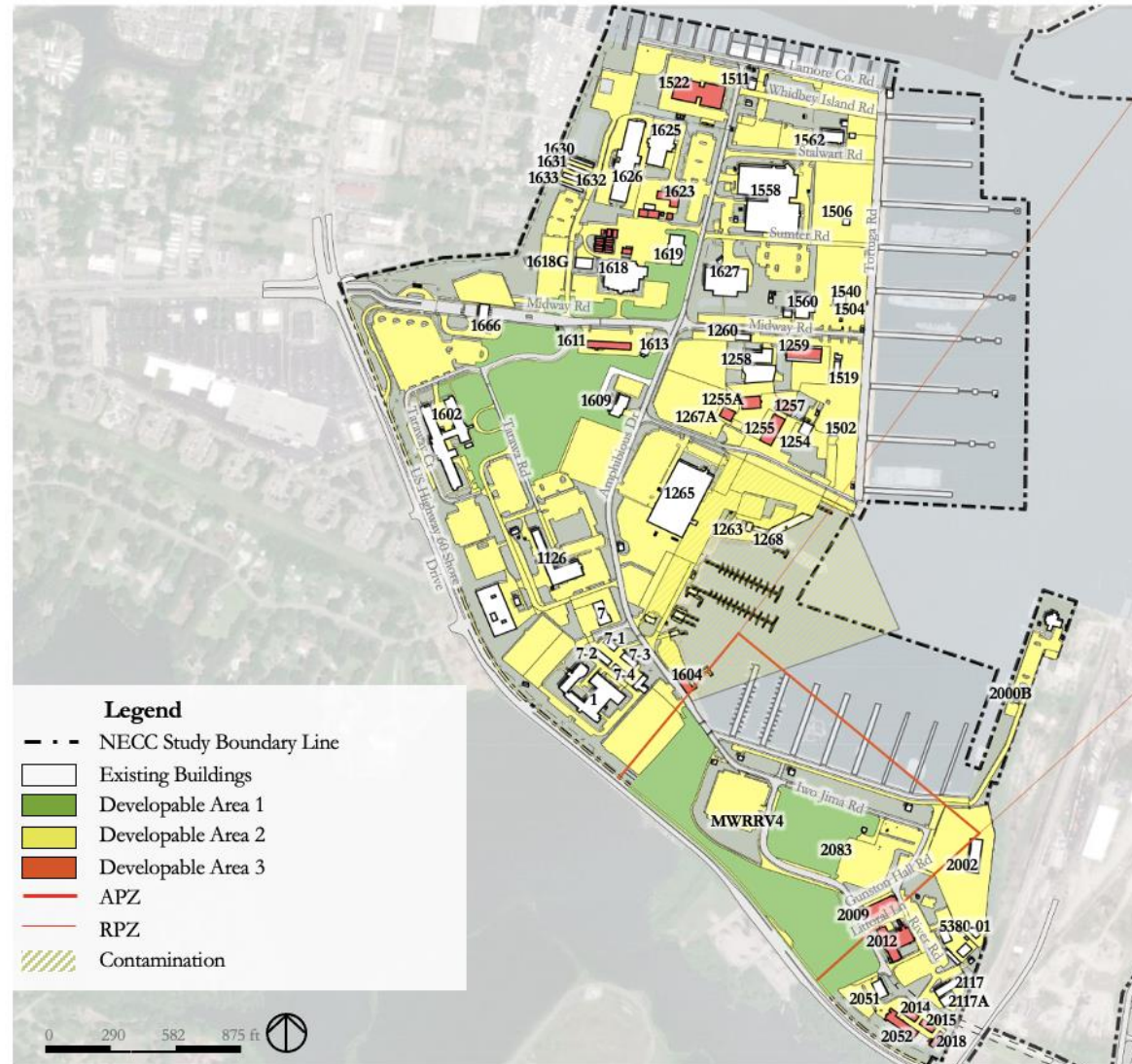


Pre-ADP NECC Campuses across JEBLCFS



NECC has 59 buildings spread across seven campuses. Most of the buildings are located on the West Campus of the Little Creek portion of JEBLCFS with five other campuses across Little Creek. The seventh campus is Fort Story approximately six miles away. Maritime Expeditionary Security Squadron (MSRON) 10 High Value Unit (HVV) requires access to the piers as do many of the units on the West Campus. Due to the preponderance of NECC Units on the West Campus and easy access to the West Campus piers, it was decided that the ADP NECC Campus would be consolidated on the West Campus. This would require relocation/accommodation of five JEBLCFS units

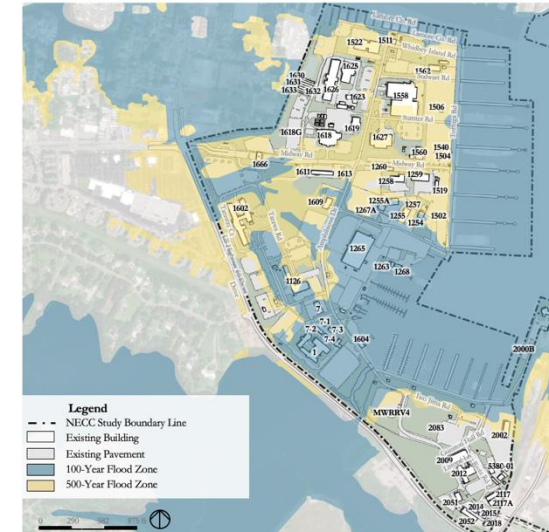
Developable Area



Storm Surge Map

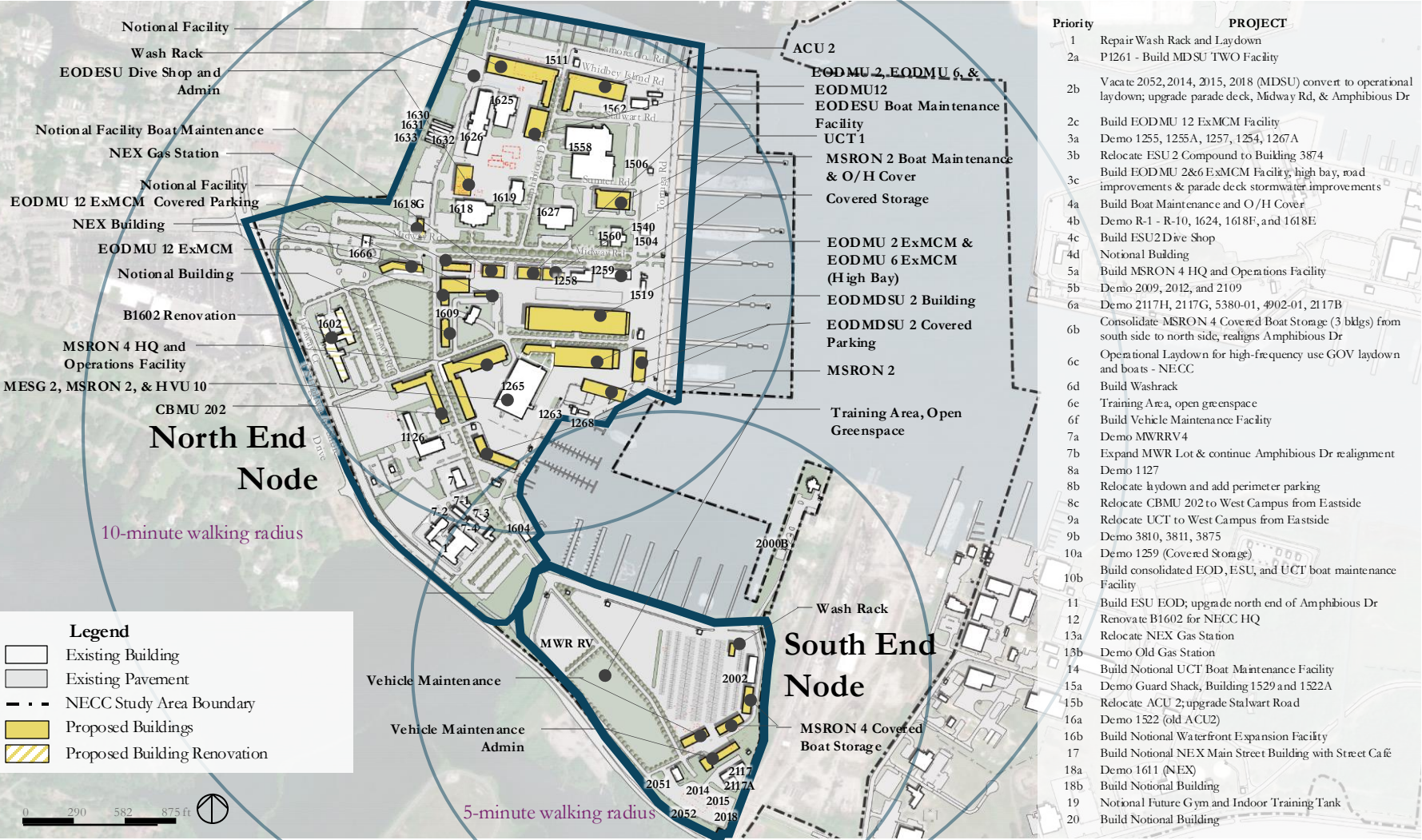


Flood Zone Map



Multiple constraints affect the West Campus. The storm surge (upper right) can be significant with all the site potentially susceptible to storm surge. The lower right plan shows the portions of the site in the 100-year and 500-year flood plains. The left-side plan shows the accident potential zone (APZ) and runway potential zone (RPZ) from the Norfolk International Airport. When the constraints are overlaid, the developable areas are like “Swiss cheese”, making the creation of a consolidated campus challenging. The area in the APZ can only have surface development such as parking.

Illustrative Plan



The Illustrative Plan above shows how the installation can develop two nodes in the West Campus to meet known requirements for NECC while leaving room for notional capacity to accommodate future growth. In addition to the mission facilities, the North End node features a new parade deck and an upgraded street network. The South End features a new training green and upgraded streets. The end state plan meets the known NECC mission requirements while siting replacement facilities for

North End	Future Supply	4,228 spaces	South End	Future Supply	308 spaces
Parking	Future Demand	4,185 spaces	Parking	Future Demand	150 spaces
	Delta	+43 spaces		Delta	+158 spaces

ACU 2 and NEX. The plan leaves room for 135,000 sf of notional facilities. To meet the future parking demand, all parking is either in surface lots or on-street – no garages are needed. The smaller circles indicate a five-minute walking radius, the larger a ten-minute walking radius.

The Project List and Implementation Plan provide an order that ensures the worst facilities are replaced first, construction does not impede on neighboring unit buildings until that unit is ready to move, and, due to the limits of military construction funding, Sustainment, Restoration, and Maintenance funds are used to the fullest extent.

Illustrative Plan Perspective



NECC Campus Design: The ADP places a green at the “center” of the NECC Campus. The central green provides a location for events, promotions, and changes of command. It also provides a “there, there” similar to parade fields on Army bases. The NECC Headquarters (HQ) building fronts on the green with units and mixed-use commercial (Navy Exchange vendors) surrounding the green. NECC units that require access to the waterfront and piers are located along open laydown areas that lead to the piers. There are also boat ramps and drydock at the waterfront. Parking is “sprinkled” throughout the site making it easy for employees to park and walk quickly to work. (The five-minute and ten-minute walking distances are on the Illustrative Plan.) The campus incorporates street parking to the greatest extent possible. Street parking requires fifty percent less square footage than parking in a parking lot and thus saves for land for stormwater capturing or future development. The walkable campus helps reduce the need for government vehicles.

Although industrial, the fronts of the buildings front onto tree-lined boulevard that are wide enough to allow boats and their haul vehicles to travel about the site. The tree-lined boulevards also capture rainwater helping to control stormwater runoff. Due to the proximity to the water as well as the storm surge and flood predictions, functions that do not have to be at ground level are located on the second and third floors. These include administrative, training, planning, medical, and storage. Functions on the ground floor include boat maintenance and ground maintenance. The first floors are designed with electrical (including outlets), heating, ventilating, and mechanical equipment above the four-foot level with the walls being made of resilient materials so if water enters the bays they can be easily hosed out.

Vision and Patterns

During the ADP Workshop all attendees participated in a Visioning Session where they filled out slips with their vision for the NECC campus. Those slips were analyzed with three major themes emerging: a West Campus with waterfront access and an East Training Campus with Optimal Storage and Purpose-Built Facilities. Those themes were woven into a vision. Campus and building related patterns, from the Vision Preference Survey, were then selected for ADP development.

“To create a **West Command Campus** anchored by **Waterfront Access** with **Optimal Storage and Purpose-Built Facilities.**”



PATTERNS FOR WATERFRONT ACCESS

1. Waterfront Activities
2. Multi-Story Buildings
3. Mission Flow
4. Consolidated Support Areas
5. Consolidated Laydown Areas
6. Consolidate Headquarters Functions
7. Haul Routes
8. Low Impact Development
9. On-Street Parking

PATTERNS FOR OPTIMAL STORAGE

1. Ideal Storage Locations
2. Mission Focused First Floors
3. Functional Maintenance Bays
4. Consolidated Support Areas
5. Modern Workspaces

PATTERNS FOR PURPOSE BUILT FACILITIES

1. Purpose-Built Facilities
2. Flexible Facilities
3. Looped Utility Systems
4. Grow Vertically
5. Visible Entries
6. Direct Sidewalks
7. Open Staircases
8. Underground Utilities
9. Narrow Wings
10. Ample Windows

NECC ADP Building Standards



EODMU 2 and 6 ExMCM North Elevation



EODMU 2 and 6 ExMCM South Elevation

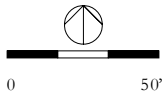
NECC Building Standards were included in the ADP that comply with the JEBLCFS Design Standards and Naval Facilities (NAVFAC) Installation Development Plan Consistency Guide. The proposed treatment include durable materials such as steel or concrete structures with concrete masonry unit (CMU) or brick-faced walls, anodized aluminum windows and low or standing seam metal roofs. Roof top structures, similar to the current NECC HQ, can signify the main entries and hide roof top mechanical units. Major NECC buildings also had schematic floor plans and elevations developed so the proposed building could fit on the proposed site.



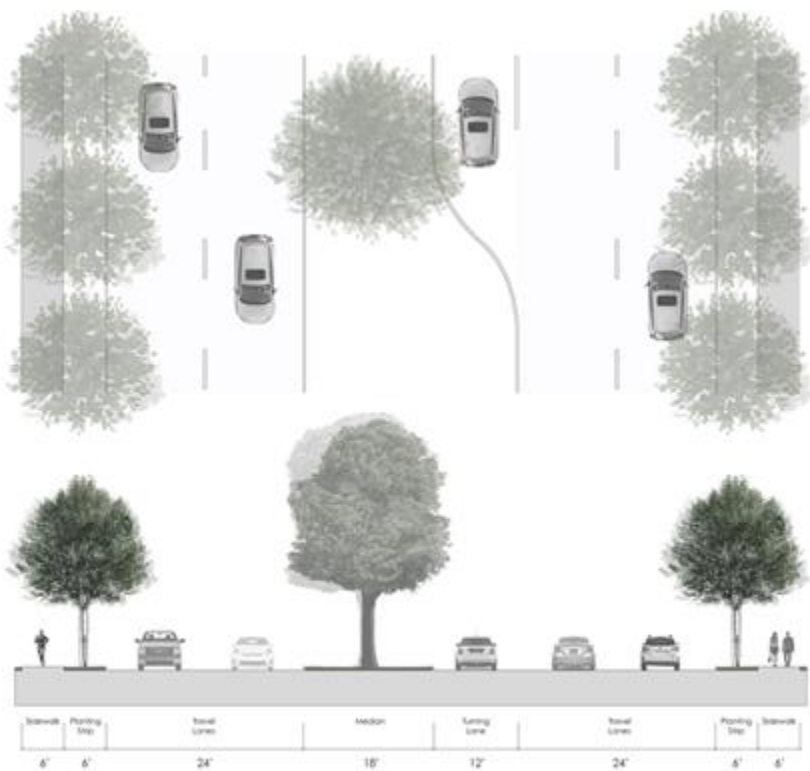
EODMU 2 and 6 ExMCM West Elevation



EODMU 2 and 6 ExMCM East Elevation



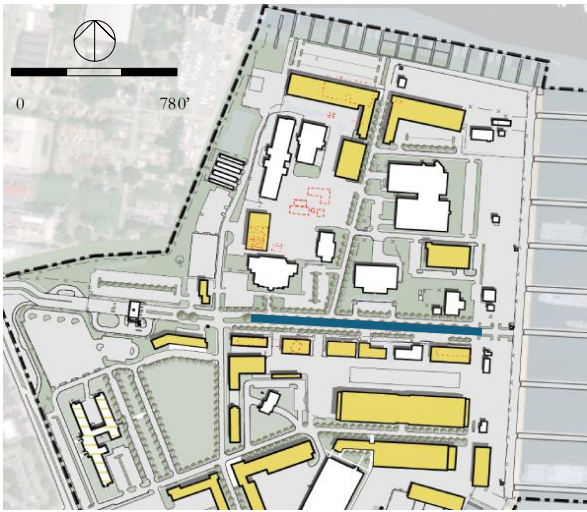
NECC ADP Street Standards (Midway Drive Example)



The ADP also recommends Street Standards for each of the street types. These standards include features to improve safety, stormwater management, and minimize future maintenance. A median, planting strips, and street trees are recommended to absorb stormwater and protect pedestrians from vehicular traffic; sidewalks to increase pedestrian safety and campus connectivity; a widened green median with a left-turn lane to increase vehicular safety, a pedestrian-friendly environment, and environmental benefits; and durable paving to enhance lifecycle efficiencies. Parking lots are encouraged to have planting strips to retain stormwater runoff close to where it is generated.

Overall Widths	Min.	Max.	Recommended
Right-of-Way (ROW) Width	47'	105'	106'
Verge Width	8'	16'	6'
Curb-to-Curb Width	10'	17'	28'
Median	11'	15'	30'

Lane & Edges	Min.	Max.	Recommended
Sidewalk	4'	6'	6'
Planting Strip	4'	10'	6'
Traffic Lanes	10'	12'	12'
Turn Lane	10'	12'	12'



For Midway Drive (*shown in blue on the above map*), the upgrade includes features to improve safety, stormwater management, and minimize future maintenance. More specifically a median, planting strips, and street trees are recommended to absorb stormwater and protect pedestrians from vehicular traffic; sidewalks to increase pedestrian safety and campus connectivity; a widened green median with a left-turn lane to increase vehicular safety, a pedestrian-friendly environment, and environmental benefits; and durable paving to enhance lifecycle efficiencies.

Sustainable and Resilience Design Features

Sustainability and Resilience Standards were also included in the NECC ADP.

Sustainable Design

- New construction and major renovations shall follow Guiding Principles Validation requirements and third-party sustainable design certification
- Recommended certifiers include US Green Building Council's (USGBC) Leadership in Energy and Environmental Design (LEED), Green Building Initiative's Green Globes, and the WELL certification rating systems.
- Sustainability certification goals include employing integrated design principles, optimizing energy performance, protecting and conserving water, enhancing indoor environmental quality and reducing environmental impact of materials.

Sustainable Building Elements

- Sustainable building elements incorporate energy conservation, water conservation, and sustainable materials
- Integrate sustainable building elements into the architectural and site design, allowing the elements to fulfill other building requirements as well as sustainability
- Integrate daylighting strategies into the design of all buildings
- Provide access to daylight for all regularly-occupied spaces used for visual tasks. Passive strategies combined with daylight harvesting technology, can significantly reduce lighting demand while simultaneously boosting occupant productivity
- Take advantage of the natural movement of air as a result of temperature and pressure differences to offset energy demands associated with space heating and cooling. Natural ventilation has the capacity to reduce the hours outside of the comfortable range to fewer than two percent of occupied hours. Through proper orientation and operability, fresh air can be supplied and exhausted without the need for mechanical equipment
- Use high (transom) windows to get light deep into

- the building mass
- Integrate building openings and sun-control systems
- Use glazed interior office walls
- Use building-integrated photovoltaic (PV) systems at trellis, shade structures, parking, and building entries
- Passive solar control through the use of shading devices is critical to optimizing solar resources throughout the year. Combined with daylighting and thermal mass strategies, properly designed shading can both mitigate heat gain during the summer and take advantage of heat storage in the winter. Photovoltaic canopies can provide shade along south-facing facades, attached or unattached to the building, which combines passive and energy-generating strategies
- Select materials consistent with LEED, Green Globes, and WELL standards
- Use regionally sourced materials
- Use materials with recycled content
- Use rapidly renewable materials

Resiliency

- Locate habitable floors above the 500-year flood plain and free-board level
- If mission requires a floor to be placed lower than the 500-year flood plain, locate all electrical, plumbing, heating, ventilating and air conditioning equipment above the 500-year flood plain
- Seek out sustainable strategies that save on energy and water usage to help provide a more resilient and longer operating facility during emergencies
- Use site generated energy to provide a more resilient facility when normal energy sources may be off or intermittent. Provide islanding capability

