WHOI and Plans for Facilities

Mark R. Abbott 26 August 2020

CWATER - Alternatives Comparison

Fixed Modular Dock:

Hybrid Floating Dock:

Tension-Pile Floating Dock:



- 177 Steel Pipe Piles
- Concrete Pile Caps
- Concrete Deck

- 11-ft Deep Concrete Float
- Five 78" Diameter Guide Piles Along Bulkhead
- Four 60" Diameter Pile Mooring Dolphin in Test Well
- Two 30-ft Wide Ramps

- 5-ft Deep Steel Float
- 21 60" Dia. Guide Piles Between Float and Deck
- (120) 20" Dia. Concrete Deck
- No Ramps or Guide Piles

CWATER – Emerging Design Approach



CWATER - Open Space and Community Outreach



Looking at the New Waterfront



CWATER - View into High-Bay



CWATER - View from Public Exhibit/Event Space



Secure Undersea Research Facility (SURF)

- Preferred vendor team has been selected
- □ Next steps include
 - Design and programming meetings
 - Conceptual design and preliminary estimate package
- Preliminary concept
 - Approximately 6,000 GSF building footprint
 - Workspace on first floor
 - Office and conference space on second floor





Facilities Under Construction

New Quissett Facility (NQF)

- Construction contract has been fully executed
- Building permit issued by Town of Falmouth
- Foundations nearly complete, along with road/parking
- Superstructure will start next month
- □ AVAST (Advanced Vehicles, Autonomy, and Sensor Technology)
 - Working group gathered over 100 interviews across Institution
 - Vision as a catalyst for innovation and collaboration
 - Community-driven R&D
 - Building, sharing, and sustaining common resources
 - Reaches beyond the physical facility

NQF as of earlier this week





New Quissett Facility (NQF) Autonomy, Vehicles, and Sensing Technologies (AVAST)









- <u>R&D space</u>: free, high-value, short-term use (days-year)
- <u>An Innovation Hub</u>: promotes innovation & collaboration formally & informally: 'helpdesk' for technical mentoring & advice, proposal prep; education & training; workshops, etc.

Continued Focus on Community-Driven Innovation

- Collaboration with MIT/Lincoln Lab Beaver Works Center
 - MIT Mech Eng senior capstone course
 - Real world design experience on a problem of complex systems
 - Bring together a team with diverse experiences and knowledge
 - Structured as a start-up
- □ 2019 problem focused on new approaches to undersea platforms
 - Rapid sampling to measure a volume, not a point or line
 - Modular and scalable
- RAPID Rapid Autonomous Pod for In situ Data



RAPID Team visits WHOI





Before and After the Pandemic

Then...



Now...





New Approaches, New Partnerships

- Design thinking
- □ Scalable innovation
- □ New ways of working and collaborating
 - Remote
 - Open facilities
 - Unexpected partnerships