



THE CRANEY ISLAND CONNECTION

CRANEY ISLAND EASTWARD EXPANSION NEWS AND INFORMATION

VOLUME 3 ISSUE 7

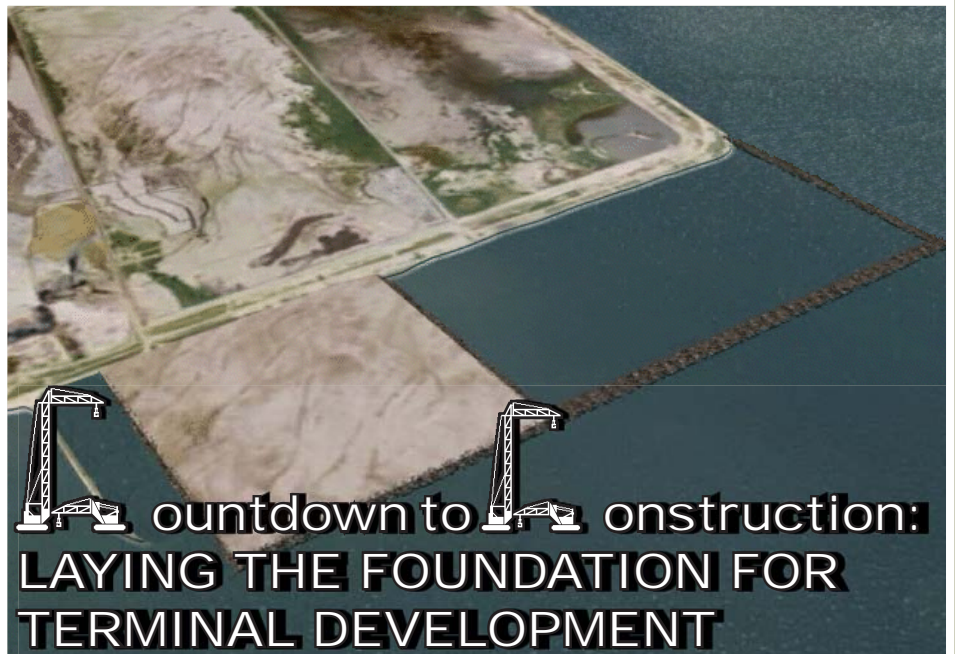
JANUARY 2010

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THE CRANEY ISLAND CONNECTION IS PUBLISHED MONTHLY UNDER THE AUSPICES OF THE VIRGINIA PORT AUTHORITY AND THE U.S. ARMY CORPS OF ENGINEERS, TO PROVIDE READERS WITH REPORTS RELATED TO THE DEVELOPMENT OF THE EASTWARD EXPANSION OF CRANEY ISLAND. ARTICLES PRINTED HEREIN ARE FOR INFORMATIONAL PURPOSES ONLY. WE INVITE READERS TO COMMENT ON ARTICLES AND SUGGEST FUTURE TOPICS FOR CONSIDERATION.

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Craney Island Eastward Expansion dike construction is set to begin this summer. Starting construction is critical to optimizing the project’s schedule and achieving its dual purpose—extending Craney Island’s useful life and expanding Port of Virginia cargo handling capacity. First, starting dike construction now allows the project’s dual purpose to drive its schedule over the long-term. Second, it provides flexibility in phasing Craney Island Marine Terminal’s (CIMT) opening date to meet Port demand for import and export services. Finally, it offers significant opportunities to realize cost-savings during the filling and ground improvement project phases. This issue of The Craney Island Connection examines how engineers are phasing project development over the long-term to maximize project benefits.

BACKGROUND

The need for the Craney Island Eastward Expansion has always been grounded in its dual purpose. Accordingly, the construction phasing has had to at once recognize the need for expanded dredged material capacity at Craney Island, while considering the ebbs and flows of cargo, in light of variable demand for East Coast cargo handling capacity.

In 1997, Congress authorized feasibility planning for the Craney Island Eastward Expansion. It was thought at the time that extending the useful life of Craney Island for dredged material placement would ultimately

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The Craney Island Eastward Expansion is being completed by the Army Corps of Engineers and the Virginia Port Authority. The project will extend the life of the Craney Island Dredged Material Management Area and also create land for a marine terminal.



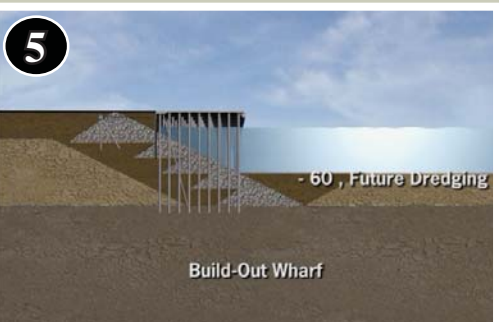
The Craney Island Eastward Expansion will be constructed on the eastside of the existing Craney Island and bound by perimeter dikes. Building the containment dikes as early as possible, ensures the project team will have maximum flexibility to phase project development to meet Port of Virginia cargo demand.



Because the soil directly underneath the expansion site is composed of soft clays, this material will be pre-dredged before constructing the dikes. After pre-dredging, the dikes will be constructed by placing layers of rock and sand. This construction method will ensure the stability of the expansion and subsequent marine terminal.



An open-pile supported wharf structure will be built. The wharf will be capable of accommodating up to twenty-eight container cranes for cargo loading and unloading operations.



drive the project schedule. However, between 2001 and 2004, The Port of Virginia experienced a 39 percent growth rate in containerized cargo volume. Similar growth had also been experienced at other major U.S. containership-ports on the East and West Coasts. This strong growth was expected to continue, as cargo volume for The Port of Virginia was set to exceed planned capacity in the near term. As a result, the need for CIMT became the driver for the project schedule and engineers sought to expedite the terminal opening date, in order to capture predicted growth.

MOVING FORWARD

Today, the recent economic downturn has again shifted the strategy and factors governing the project construction schedule. The need for expanded dredged material capacity at CIDMMA becomes the more immediate project driver, as demand for import and export services is presently tempered. However, even though the downturn has clouded future trade patterns, container cargo demand is cyclical. For example, having the flexibility to open the terminal to accommodate anticipated future growth from the Panama Canal Expansion is just one of the many factors engineers must consider in their scheduling strategy.

By starting dike construction early, engineers can strategically execute the timing of cell filling to maximize flexibility over the long term. With the containment cell available for fill, engineers will utilize one of two distinct methodologies depending on which need is driving the project schedule at the time.

Hydraulic Filling

The Craney Island Eastward Expansion Feasibility Report (2006) detailed a plan to fill the expansion cells with material hydraulically dredged from Norfolk Harbor during routine dredging operations. Under this scenario, the timing to fill the cells relies on the volume of material that can be produced from local dredging projects, which will vary year to year. As a result, this method extends the fill phase across several years and would be utilized if demand for cargo capacity did not warrant accelerating the terminal opening date.

One major benefit of this method is it incurs no direct project cost and could potentially represent tens of millions of dollars in cost savings.



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After the dikes are built, the site will be filled with dredged material. Under one scenario, the material will be taken from Norfolk Harbor dredging projects. Ground improvement techniques will be used to strengthen the newly placed material.

Alternatively, the material may be mined from within existing Craney Island. This approach will expedite the construction schedule, allowing the first phase of the terminal to open sooner.

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Mining CIDMMA

As an alternative the cells could be filled with material mined from within CIDMMA. This method involves hauling material from within existing Craney Island and placing the material into the new cells. The material borrowed from within CIDMMA will take less time to stabilize than the hydraulic material because it is drier. Consequently, within this scenario, the time required to fill the cells is significantly reduced. This method would be most appropriate if the schedule to fill the new container cell needs to be accelerated to meet an increase in container terminal cargo demand.

Today, demand for cargo capacity at The Port of Virginia is expected to see a steady average growth rate of at least five percent annually over the long-term. However, as mentioned above, the opening of the Panama Canal could sharply increase the amount of cargo entering The Port of Virginia.

Expansion of the Panama Canal is expected to reduce the dominance of West Coast ports handling freight from Asia, as the world's largest container ships will have more direct access to East Coast ports. Starting

dike construction of the Craney Island Eastward Expansion affords the VPA the flexibility to open the terminal at an accelerated date, thereby positioning it to capture future growth.

CONCLUSION

The Craney Island Eastward Expansion represents an investment today that will pay large future dividends. Since its inception, the dual purpose of the Craney Island Eastward Expansion has governed its strategic development and will continue to do so, in the future. Over the years, demands for dredged material and container cargo handling capacity have alternatively driven the schedule. Accordingly, starting dike construction early in the project schedule allows the Corps to leverage additional dredged material storage capacity, while positioning the VPA to better control project costs for filling and ground improvement of the expansion cell, and providing flexibility in the opening date of the marine terminal to meet demand.



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Phase 1 Terminal
· 3,000 LF Wharf (3 Berths)
· 8 Container Cranes

With the first phase of the marine terminal complete, the remainder of the eastward expansion will continue to receive dredged material. At this time, the terminal will be operational.



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The terminal will continue being built in phases in order to meet the Port's future cargo needs. The Craney Island Eastward Expansion will allow The Port of Virginia to expand its facilities allowing it to capture East Coast cargo growth and the economic benefits that come with it.

Project Update

The Craney Island Eastward Expansion project team has been working with the NRC¹ Canadian Hydraulics Centre to determine the armor stone size required to protect project dikes from bow thruster erosion.



Model Set-Up With The Dike Slope On The Right And Vessel Hull On The Left

Bow thrusters are propulsion devices that facilitate the maneuvering and docking of cargo vessels. Today, the container ships that call on The Port of Virginia have single bow thruster, however, with the Panama Canal Expansion larger "post-panamax" ships featuring dual bow thrusters will dock at Craney Island Marine Terminal (CIMT). By creating a scale model of the ship's bow thrusters and the project dike, design engineers were able to optimize the size of armor stone required to ensure bow thruster action does not erode the dikes or damage the wharf.

The models determined that the forces caused by the dual bow thrusters were not as high as predicted, thereby allowing the design to use a typical stone size. Armor stone will be installed after the piles for the wharf are driven, as part of the Virginia Port Authority's CIMT contract.

¹ National Research Council Canada

UPCOMING EVENTS

The Virginia Port Authority (VPA) and the U.S. Army Corps of Engineers (USACE) will host a Contractor Open House for vendors and sub-contractors interested in upcoming contract opportunities associated with the Craney Island Eastward Expansion project.

The purpose of the Open House is to provide important new project details including information on project dike construction, scheduling, and materials quantities.

Don't Miss This Opportunity To Learn Important New Information About Upcoming Contracting Opportunities!

8 AM - 12 PM - FRIDAY FEBRUARY 26, 2010
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