



*THE FORCE BEHIND THE FLEET*

# Shipyard Infrastructure Optimization Plan (SIOP)

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*Presented to:*

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Exposition**

*Presented by:*

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Washington Navy Yard circa 1874-76 servicing the *USS Alarm* torpedo boat.

- The U.S. Navy began construction of its fleet in 1794, and established its first shipyard in 1799, Washington Navy Yard. It is also the Navy's oldest shore establishment and is still in use today.
- Congress passed The Naval Act of 1938 and The Two-Ocean Navy Act of 1940 to vastly expand the American fleet. This led to the establishment of an unprecedented shipbuilding program, including the construction of submarines, carriers and destroyers. By 1945, the Navy had constructed the largest naval fleet in history.
- At its height after World War II, the U.S. Navy operated 11 shipyards across the country with facilities from California to New York. Following the war, naval shipyards largely moved away from new construction and focused their efforts on maintaining ships of the fleet.
- Shipyard closures occurred frequently under the Base Realignment and Closure (BRAC) process during the 1990's, shrinking the number of government-owned shipyards to four.



# Public Shipyards & PMS 555



## Washington

- PUGET SOUND NSY & IMF



## Maine

- PORTSMOUTH NSY

## Washington DC

- NAVSEA DIR & PEOs

## Hawaii

- Pearl Harbor NSY & IMF

## Virginia

- NORFOLK NSY



# Shipyard Infrastructure Optimization Plan



- A 2017 GAO Report noted that the facilities maintenance backlog for naval public shipyards had grown to \$4.865 billion and that the Navy did not have a comprehensive plan to address and monitor its infrastructure investments.
- SECNAV Report to Congress 12 Feb 2018, “The Shipyard the Nation Needs,” provides a framework for recapitalizing the infrastructure at the four public nuclear shipyards. This framework is referred to as the Shipyard Infrastructure Optimization Plan (SIOP).
- Navy is committed to this plan and has estimated the cost at \$21 billion over 20 years to include:
  - Dry-dock improvements and upgrades (\$4 billion)
  - Targeted capital equipment improvements to increase equipment efficiency and depot maintenance throughput (\$3 billion)
  - Facility layout and configuration changes to improve workflow and productivity (\$14 billion)
- Without these investments, Navy Shipyards will be unable to meet the maintenance needs for aircraft carriers and submarines.



# Shipyard Infrastructure Optimization Plan Phases

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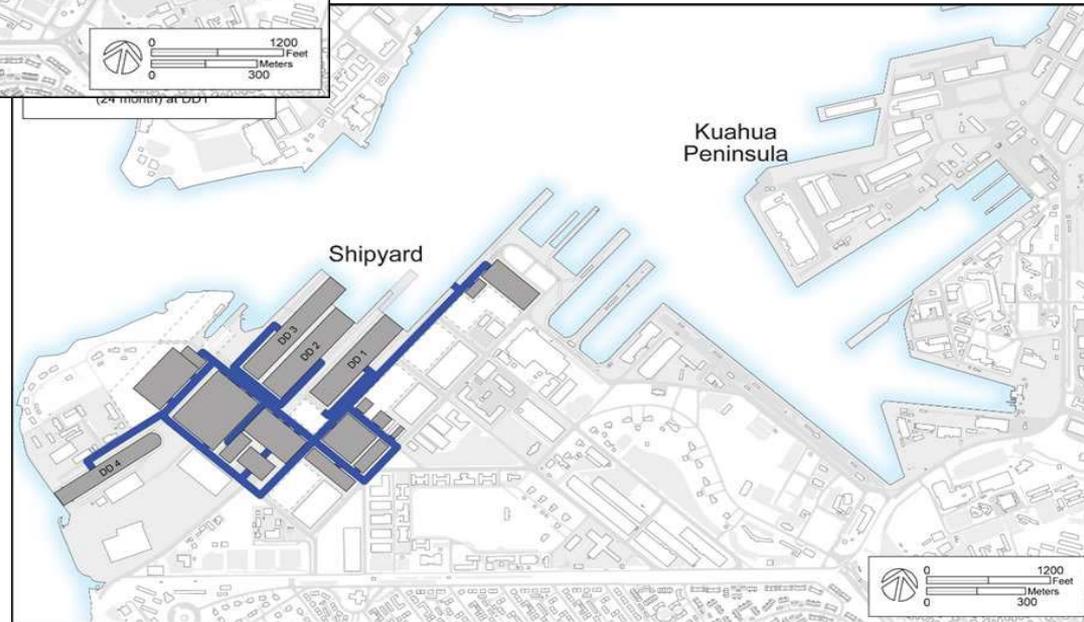
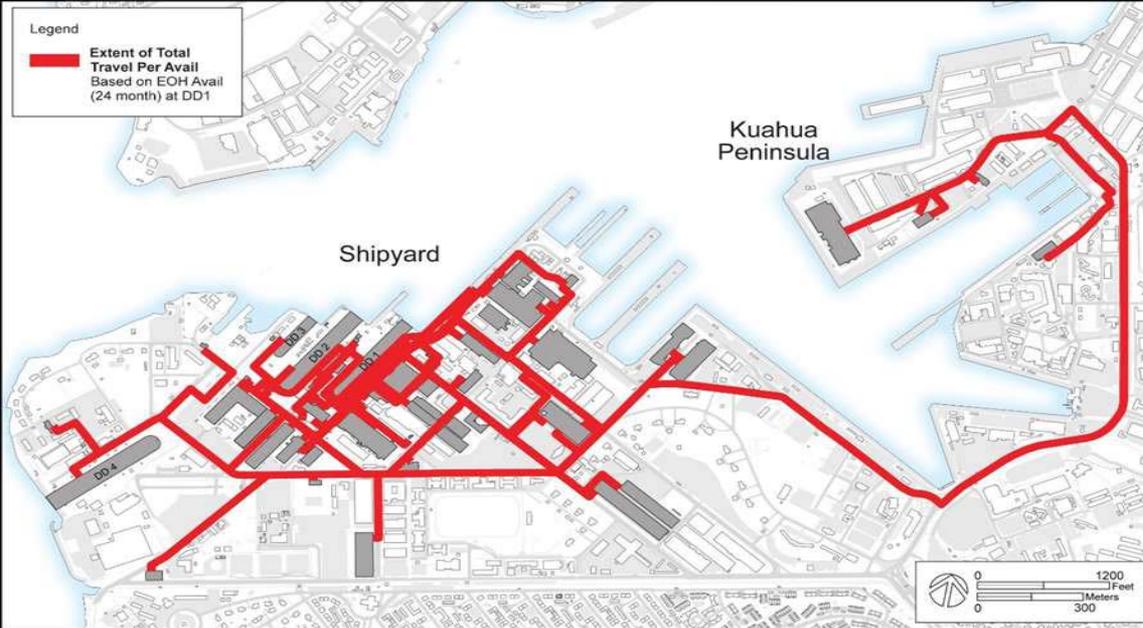
Phase I – Initial review of the infrastructure problem at the naval shipyards. Resulted in the report to Congress: Shipyard Infrastructure Optimization Plan (SIOP)

Phase II – Builds upon Phase I: more detailed industrial engineering analysis, modeling and simulation of industrial processes, development of the Area Development Plans (ADPs). Will result in a digital twin of the shipyards and 4 ADPs

Phase III – Prioritize, develop, and execute projects identified during Phase II.

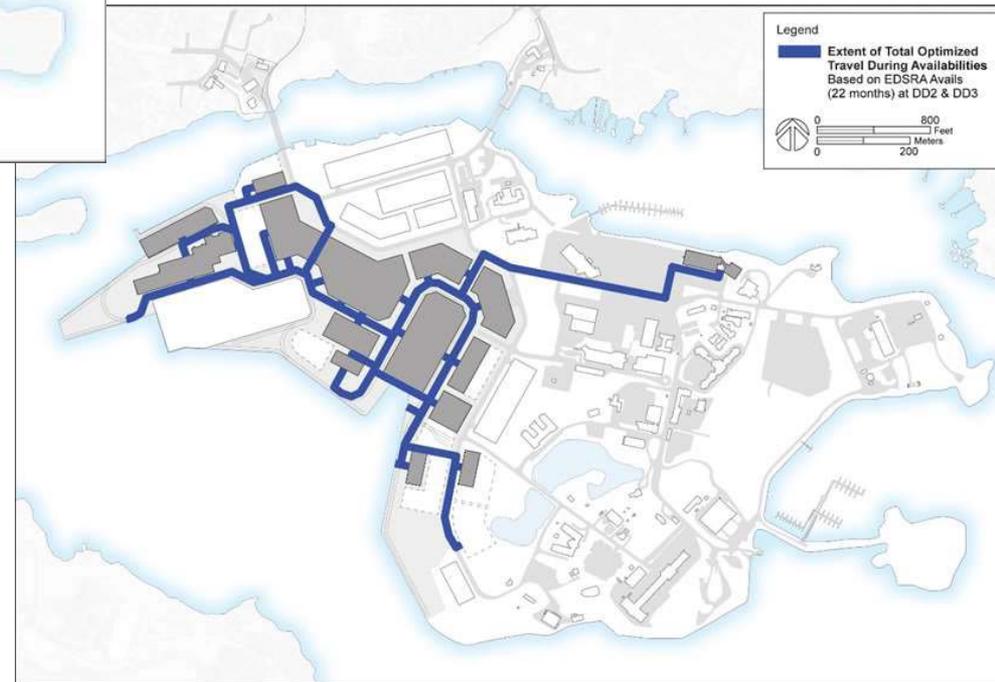
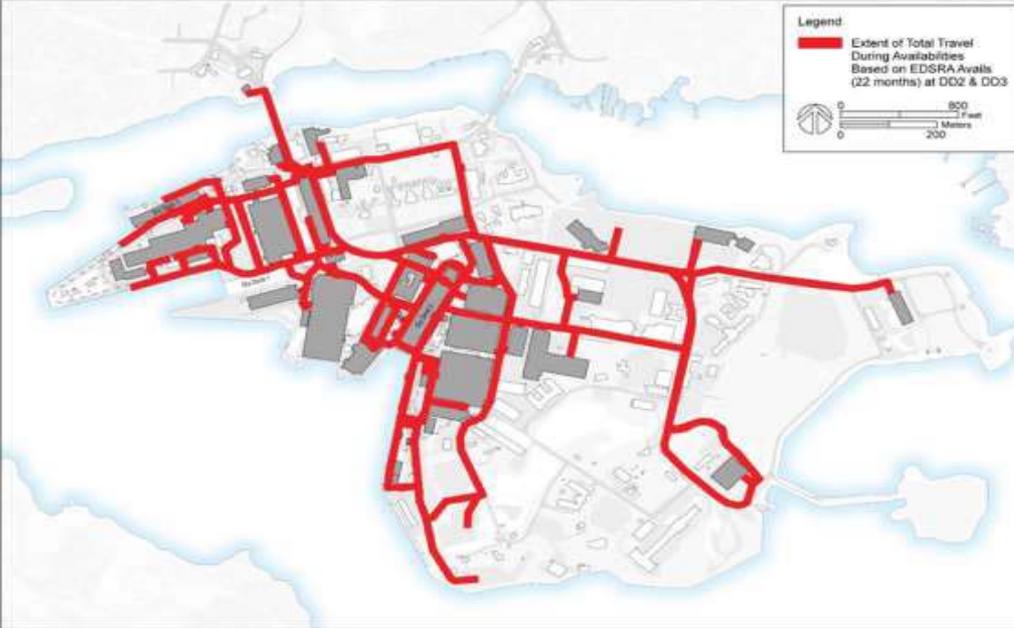


# Phase I Results: Pearl Harbor Naval Shipyard



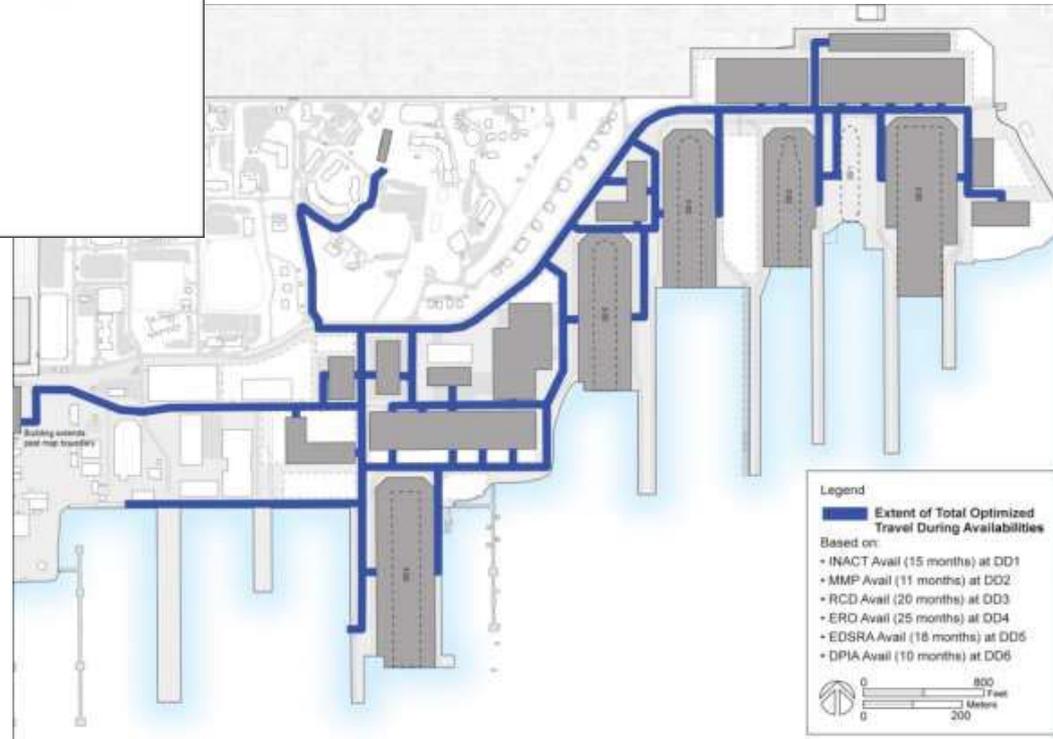
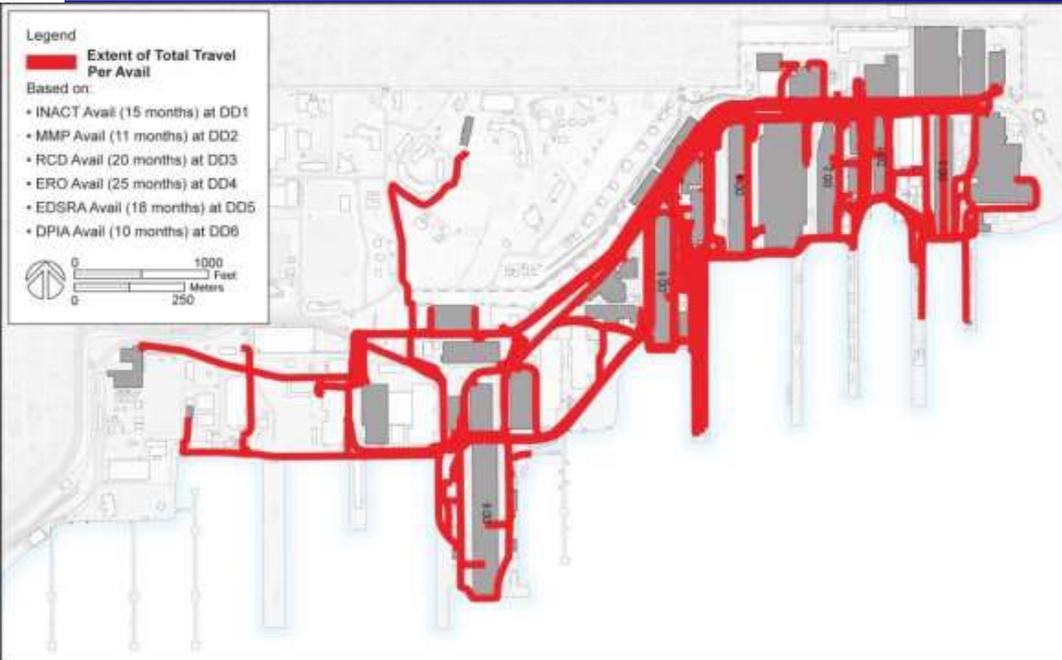


# Phase I Results: Portsmouth Naval Shipyard



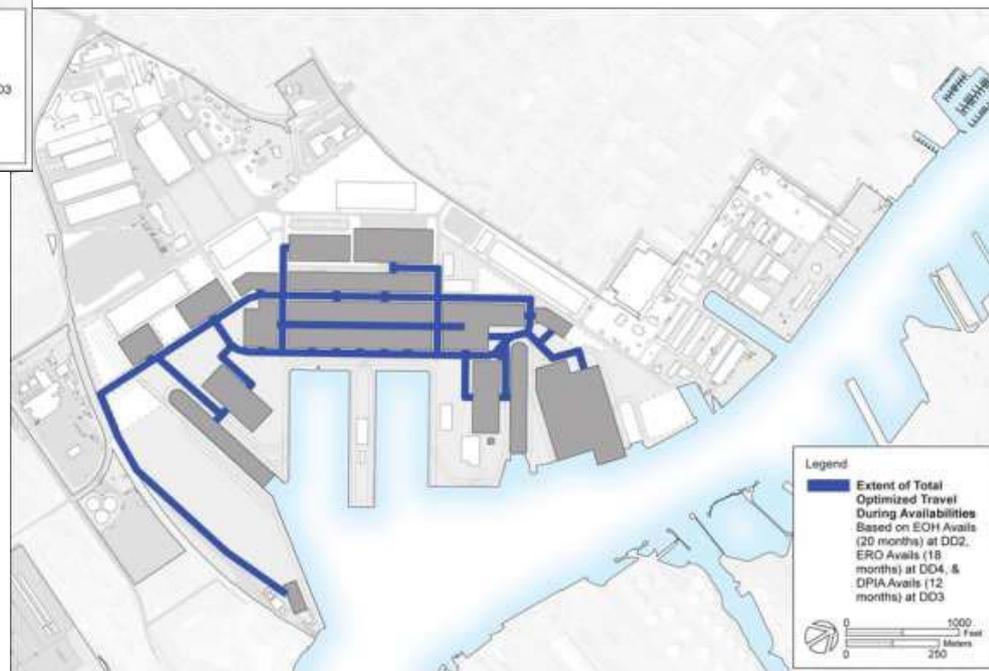


# Phase I Results: Puget Sound Naval Shipyard





# Phase I Results: Norfolk Naval Shipyard





# Shipyard Infrastructure Optimization Plan Phase II



## Industrial Engineering

- Modeling and Simulation
  - Taking advantage of OSD Commercial Technologies for Maintenance Activities (CTMA) Program through a cooperative agreement with the National Center for Manufacturing Sciences (NCMS)
  - Goal: Build a digital twin of each shipyard, which optimize all industrial processes

## Facility Engineering

- Shipyard Physical Layout
  - Gap analysis of all traditional civil engineering problems
  - Identification of future facility planning studies