

Shipyard Infrastructure Optimization (SIOP) Across the Nation

Speaker: Bryan Cochran



Shipyard Infrastructure Optimization Program (SIOP)

Kitsap Industrial Readiness Summit

Program Executive: Mr. Mark Edelson
Program Manager: CAPT David Matvay

Briefer: Bryan Cochran; Deputy Director, SIOP Puget Sound Naval Shipyard

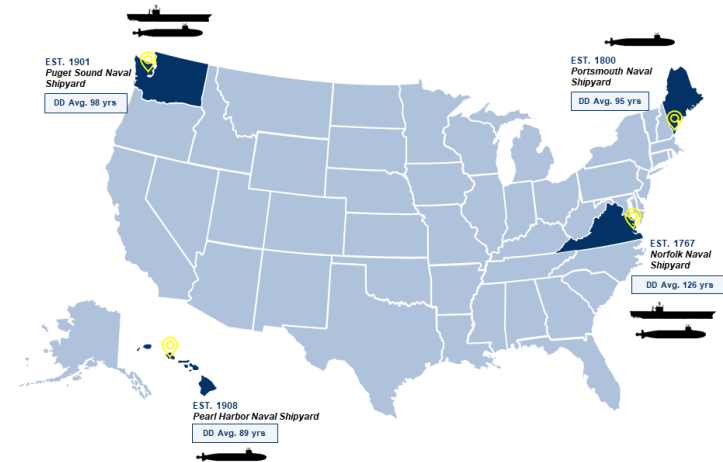
20 August 2026



Shipyard Infrastructure Optimization Program

Problem Statement

- Condition, capacity, and configuration of facilities, dry docks, and equipment at the four public shipyards contribute to inadequate throughput and loss of fleet operational availability.
- Shipyards designed for constructing conventional ships are not optimized for repairing the nuclear fleet.



Baseline Performance (2018)

- Dry dock capability/survivability gaps: insufficient dry docks for VIRGINIA VPM subs and GERALD R. FORD carriers.
- Inadequate facilities and equipment led to maintenance delays that contributed to >1,300 lost operational days for carriers and >12,500 lost operational days for submarines. (FY00-16, GAO).

Solution – SIOP

LOE 1: Construct and recapitalize dry docks and piers

LOE 2: Recapitalize and reconfigure infrastructure for optimization

LOE 3: Modernize Industrial Plant Equipment

SIOP North Star

Enable increased submarine and carrier maintenance throughput by recapitalizing shipyard infrastructure and equipment required to conduct scheduled depot maintenance and by reconfiguring infrastructure layout to deliver reductions in availability durations.



Program Benefits



Return on Investment

Operational ROI

- Dry docks to support new platforms and fleet maintenance requirements
 - Adequate inventory
 - Dimensions
 - Shore services (power and water)
- Facilities
 - Building envelope
 - Life/health/safety, fire protection, seismic
- Utilities
 - Capacity to meet total demand
 - Reliability

Financial ROI

- Baseline of lost operating days from GAO audit
 - Submarine idle time cost of \$800K / day
- SIOP digital modeling
 - Based on historic performance data
 - Captures industrial processes through the yard
 - Reduces submarine availabilities by average of 118 days across all four shipyards

Continuous Improvement

Program Initiatives

- Programmatic approach
 - Visibility of entire problem and solution
 - Standardization across the four shipyards
 - Robust governance
- Digitally modelled solutions
- Contracting methods
 - Early contractor involvement
 - Economic price adjustments and award fees
 - Multi-contract projects
- Utilities privatization

Additional Opportunities

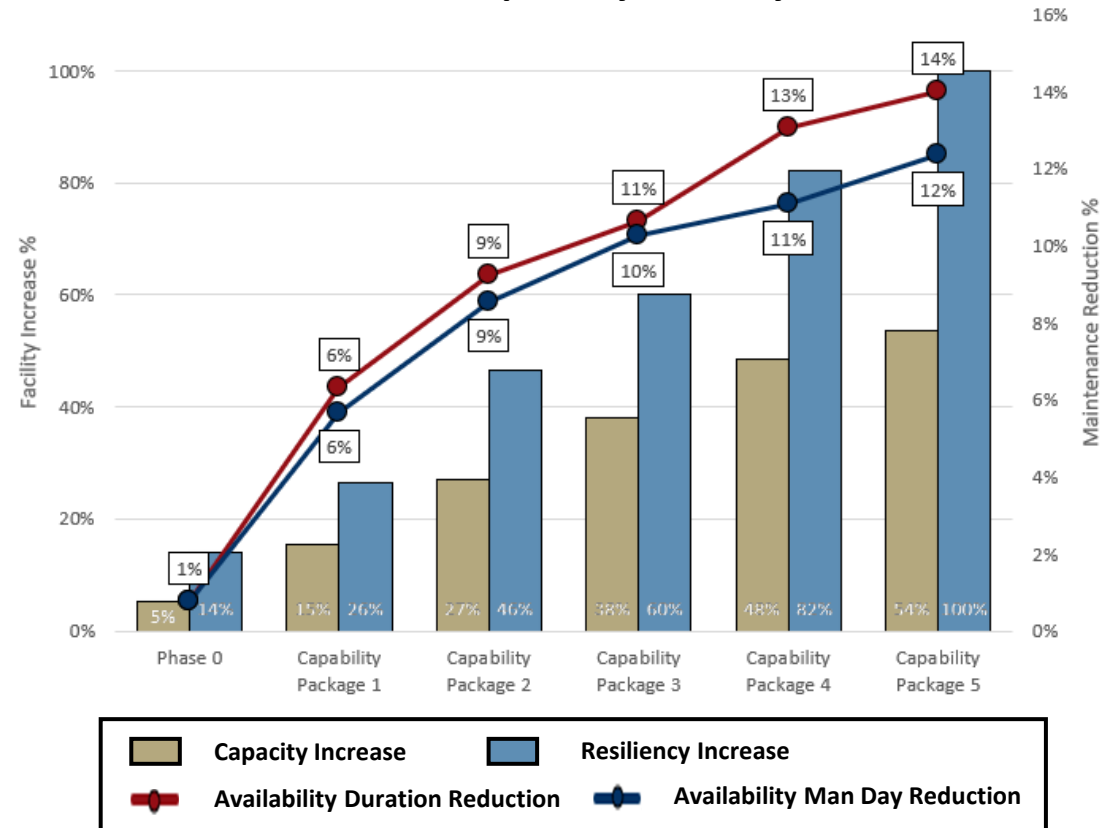
- Progressive design-build (to budget)
- Eliminate federal environmental permits for military construction
- Section 2818 & multi-year O&MN for construction
- Accept technical risk (ATFP, life span, life cycle costs)
- Private financing of military construction (OMB Circular A-11)

ROI = The Value of a Submarine at Sea

SIOP Performance

- Dry docks support the class maintenance plans for nuclear ships (quantity, size, power, and cooling)
- Dry docks survive seismic and flooding events
- Pier-side berths to achieve maintenance throughput
- Facilities and equipment are laid out for efficient ship maintenance
 - Reduced duration of availabilities
 - Reduced man day expenditure
- Buildings can be occupied and used (roof, structural integrity, life-safety code, utilities)
- Capital equipment is available for use
- Force protection requirements met
- Critical functions sustained for 14 days off grid
 - Power
 - Water

SIOP Capability Delivery



CNO Approved KPPs – 17 August 2023

- **KPP 10 - Reduce dry dock duration and maintenance availabilities**
 - Targets reductions of 8% for submarines and 5% for aircraft carriers; 15% and 10% respectively
- **KPP 11 - Reduce average number of man days for maintenance availabilities**
 - Targets reductions of 10% for submarines and 5% for aircraft carriers; 25% and 15% respectively

SIOP Construction

Completed

- 59 facility projects (\$1.8B)
- 340 pieces of industrial plant equipment (\$772M)

Work Underway

- 49 projects (\$7B) under construction, including **seven** dry docks
- 80 pieces of industrial plant equipment in procurement (\$809M)
- **Three** new dry docks under construction; **four** dry docks are being modernized



	PHNS	PSNS	NNSY	PNSY
MILCON Design	3 / \$4M	5 / \$330M	3 / \$79M	3 / \$36M
MILCON Construction	1 / \$3,069M	2 / \$329M	3 / \$398M	2 / \$1,857M
RM Design	9 / \$44M	10 / \$4M	4 / \$6M	12 / \$21M
RM Construction	8 / \$225M	17 / \$634M	6 / \$395M	9 / \$159M
IPE Procurement	12 / \$94M	14 / \$202M	35 / \$307M	8 / \$215M
Construction Complete	9 / \$74M	16 / \$557M	11 / \$436M	23 / \$716M



FY 26 Accomplishments

- Achieved Gate 4 (configuration baseline) for PNSY and PSNS
- Completed PHNS central air compressor plant upgrade
- Completed PSNS Pier 5 restoration
- Awarded PSNS relocations for seismically vulnerable facilities
- Awarded NNSY Dry Dock 3 modernization
- Received proposals for NNSY electrical privatization
- Delivered 25-ton portal cranes to PSNS (4 of 4)
- Delivered plasma cutters to PSNS (3 of 4)
- Awarded 175-ton portal crane to PNSY (7 of 7)

Dry Docks – New Construction

PHNS Dry Dock 5



Increases PHNS from 2 to 3 VACL Blk V dry docks

- Project is more than 50% complete; tremie concrete ongoing; dewatering basin next milestone
- Senior Navy engagement with parent companies facilitated increased staffing, resources, and delivery of request for equitable adjustment

PNSY Dry Dock 1 Expansion



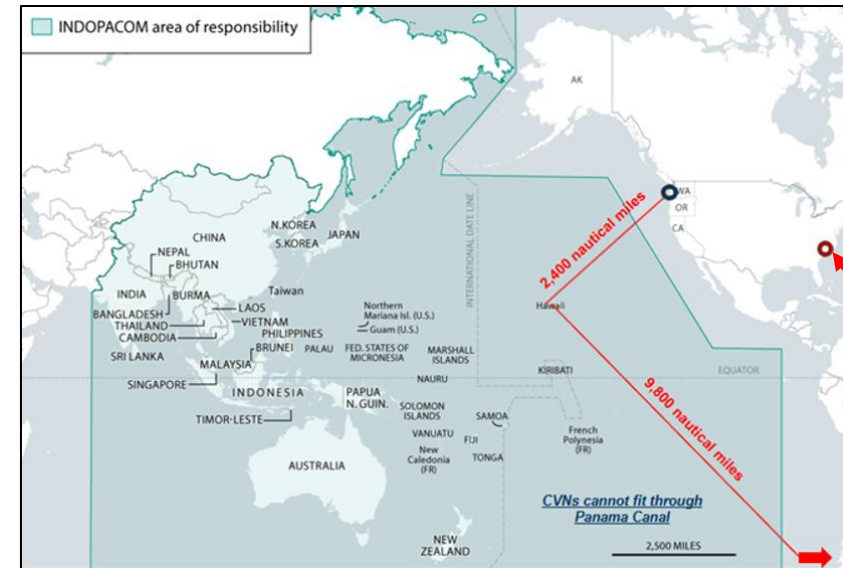
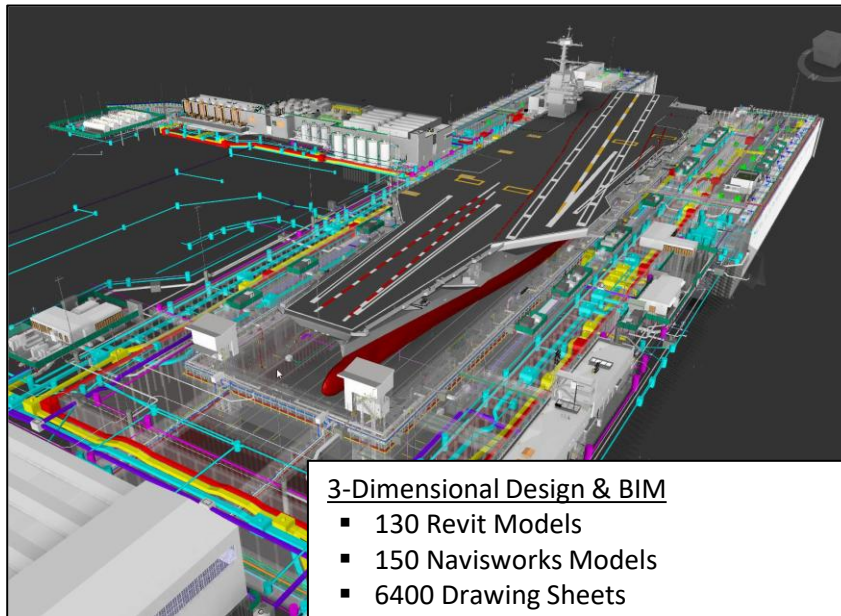
Increases PNSY from 3 to 5 submarine dry docks

- On schedule for FY29 completion; high confidence of completing within authorized amount
- Strong Navy and contractor partnership to synchronize construction and ongoing submarine maintenance
- Project milestone resequencing will gain 45 days of operational availability for next two LOS ANGELES class refueling, plus a \$16M return on investment

Avoid Navy \$800k per day of idle submarines awaiting maintenance

PSNS Multi-Mission Dry Dock (M2D2)

- The PACOM AOR does not have a dry dock to accommodate FORD class depot maintenance
- The FORD class has increased power and cooling requirements, different line-loading and dimensions, and reduced lifting access than the NIMITZ class
- Multi-contract approach, extensive modeling, collaborative design, and Phase 0 preparations reduce maintenance conflict and acquisition risk



CVN Accessibility to the Pacific

▪ Primary Facilities Delivered

- Dry Dock
- Pier 2
- Shipyard Support Building
- Forge & Heat Treatment Facility
- Radio Hill Complex (laydown area)
- Shipfitter & Welder Facility

The U.S. Navy will construct the nation's largest repair dry dock to support FORD class aircraft carriers in the Pacific

Dry Docks – Modernization

Dry Dock Modernization

- Extends operational capability of century old dry docks by another 100 years
- Cheaper to modernize than construct new graving dry docks
- Incorporating existing infrastructure, reduces complexity of shipyard operations

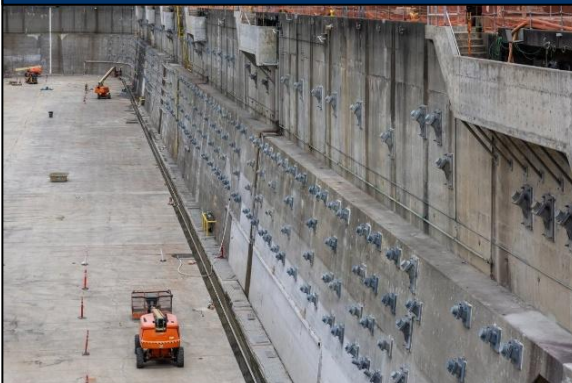
86 years old



PSNS Dry Dock 4 (ca. 1940)

- Installs wall anchors to prevent collapse during seismic event, ensuring safety of workforce, community, submarine
- Strengthens surrounding soil to reduce liquefaction concern

PSNS Dry Dock 4



85 years old



NNSY Dry Dock 8 (ca. 1941)

- Rebuilds two *circa* 1940 berths incapable of supporting ships or cranes
- Increases cooling capacity to provide FORD class dry dock in the Atlantic

NNSY Dry Dock 8



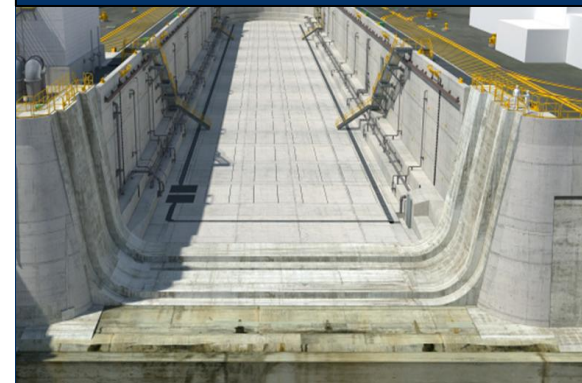
91 years old



NNSY Dry Dock 3 (ca. 1935)

- Modernizes dry dock with comprehensive structural system upgrades to enable VIRGINIA class submarine maintenance
- Widens floor for increased efficiency

NNSY Dry Dock 3



Completed Facilities



PHNS Low Pressure Air

- Modernized LPA generation and distribution to provide resilient maintenance infrastructure
- Restored LPA capacity supporting 4 dry docks, 47 repair berths, and 47 buildings at JBPHH



PHNS Water Line

- Replaced 3,100 feet of deteriorated 1922-era 24-inch cast iron water line
- Serves as primary water source for PHNS and Hickam Airfield



PSNS Pier 5

- Replaced, repaired, and reinforced degraded piles and ship connection jewelry
- Restored 1,100 LF of submarine berthing



NNSY Radiological Storage

- Reskinned and reroofed circa 1939, 100KSF warehouse
- Created watertight envelope and addressed life/safety deficiencies of nuclear refueling & radiological material storage facilities



PNSY Waterfront Production Facility

- 120KSF, 4-story facility consolidates shops, support, and engineers
- Reduces availability durations by 2% and saves \$1.8M in labor per availability



PNSY Paint, Blast and Rubber Facility

- 74KSF facility consolidated nine dispersed, aged buildings making all submarine gaskets
- Efficiencies save 2,000 labor hours per year and \$2.5M

Industrial Plant Equipment (IPE)



PHNS 5 Axis Router



PNSY Shaft Lathe



NNSY Pipe Bending Machine



PSNS 25-ton Portal Crane



NNSY Reactor Servicing Complex

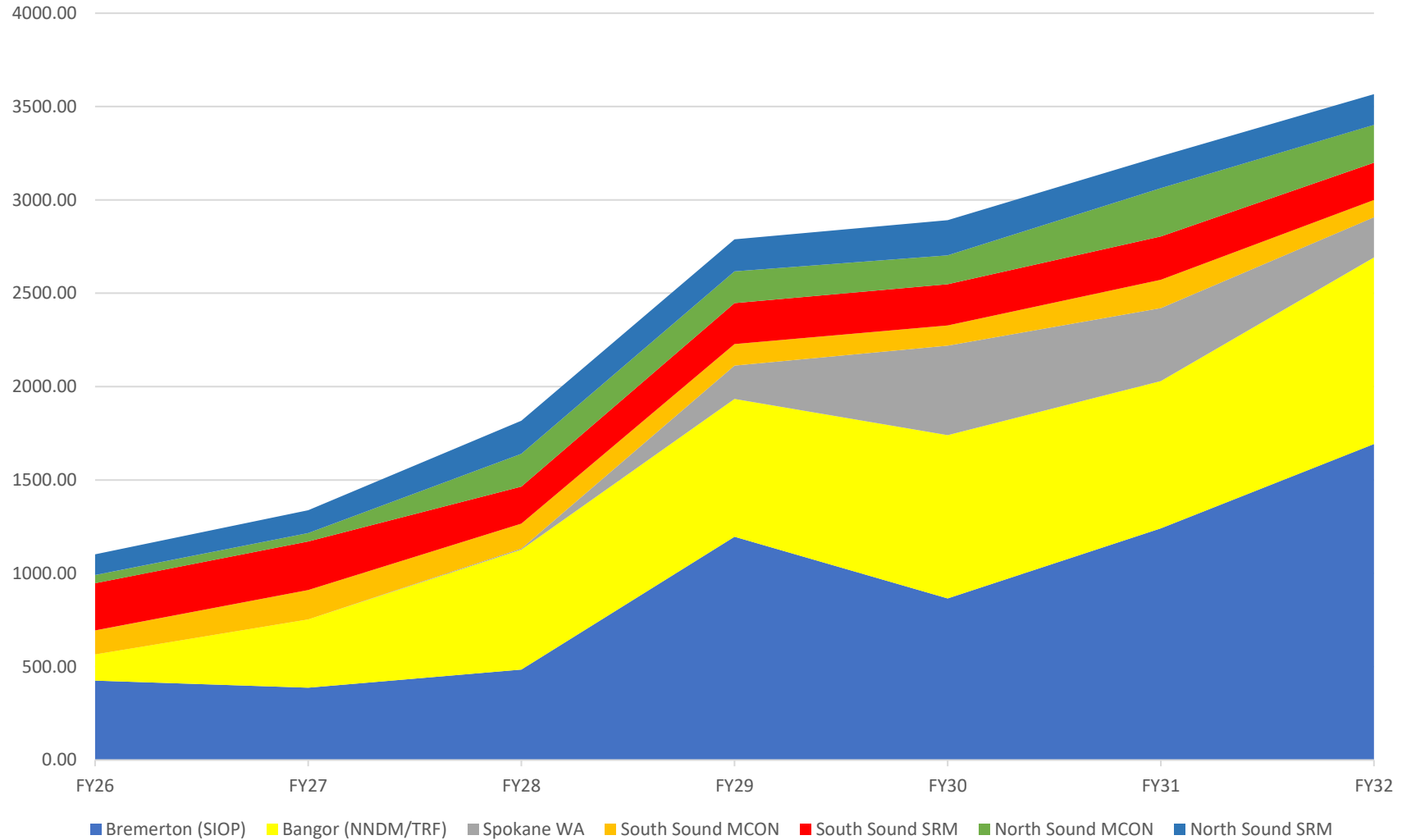
Average age reduced from 24 years to 20 years

Ongoing Construction at PSNS & IMF

Speakers: CAPT Troy Brown and
CDR John Daly



Workload Projections by Location



PRE-DECISIONAL

Multi-Mission Dry Dock Construction, EIS Status

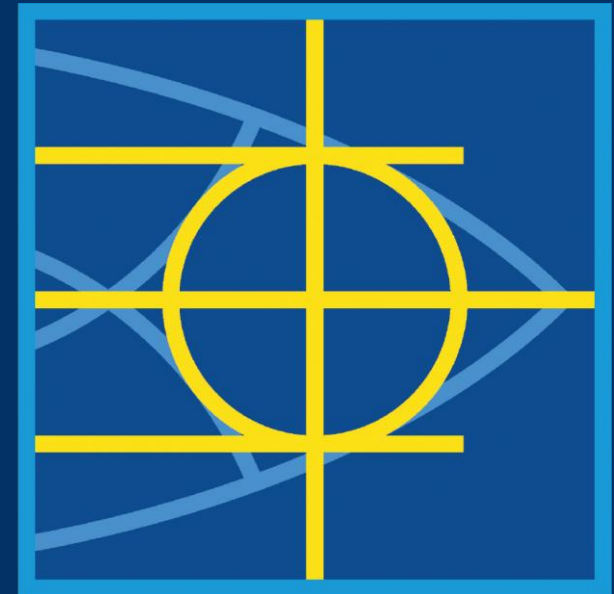
Speaker: Dave Gibson



The Navy's Largest Construction Project

Puget Sound Naval Shipyard – Multi-Mission Dry Dock

20 August 2026

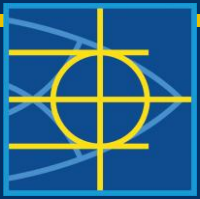


Disclaimer

*This presentation represents planning by the
Department of the Navy*

and

*a National Environmental Policy Act decision
has not been rendered.*



A Generational Challenge



The U.S. Navy will construct the nation's largest repair dry dock to support Ford-class carriers in the Pacific.



Ford-Class Aircraft Carrier



CVN-78 USS Gerald R. Ford undergoing sea trials, 8 Apr 17



CVN-79 USS John F. Kennedy undergoing sea trials, 30 Jan 26



Crew

3,200 Nimitz
2,600 Ford

-600
due to automation



Voltage

4.16kV Nimitz
13.8kV Ford

+9.6kV



Shore Power Capacity

20MVA Nimitz
40MVA Ford

+20MVA

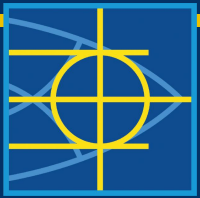


Cooling Capacity

10,000gpm Nimitz
17,620gpm Ford

+7.6Kgpm

Cooling Water	Saltwater Cooling	Saltwater Fire Water
HP Air	LP Air	Non-potable Water
Potable Water	Oily Waste	Pure Water
Sanitary Sewer	Steam	Pressure Relief 18



Strategic Importance



Panama Canal Limitation

168 ft Canal beam width

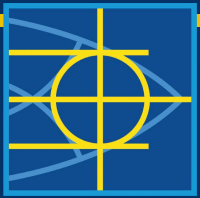
257 ft Ford flight deck width



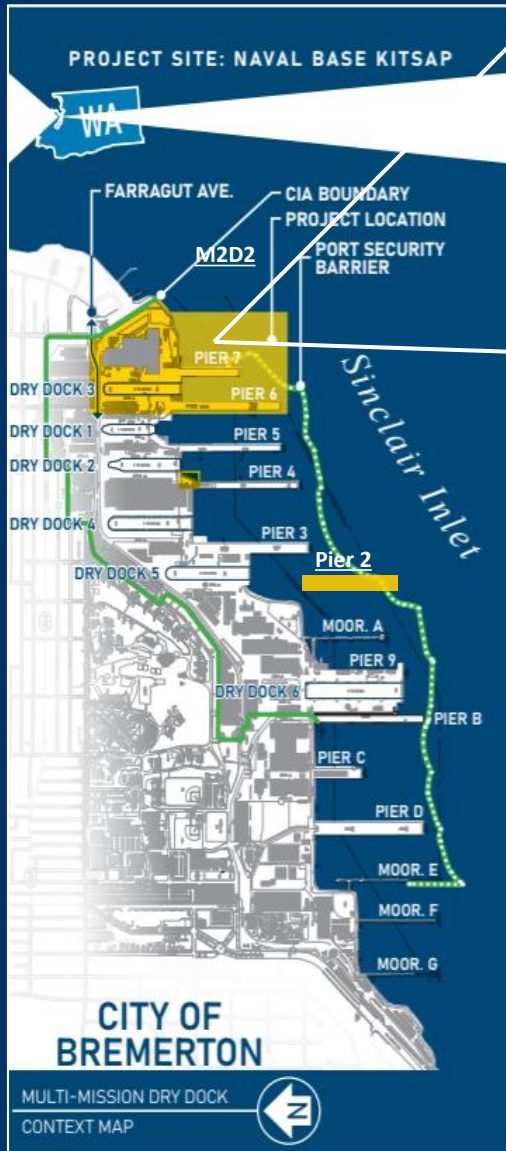
USS Carl Vinson in INDOPACOM



USNS Comfort traversing Panama Canal



Multi-Mission Dry Dock (M2D2)



Renderings of the Multi-Mission Dry Dock (M2D2)



896k CY Excavation



867k CY Dredging



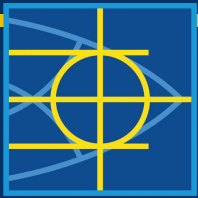
817k CY Concrete



630K CY Chamber

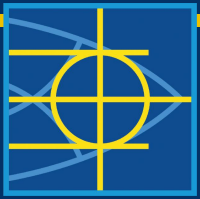


361K SF Support Facilities



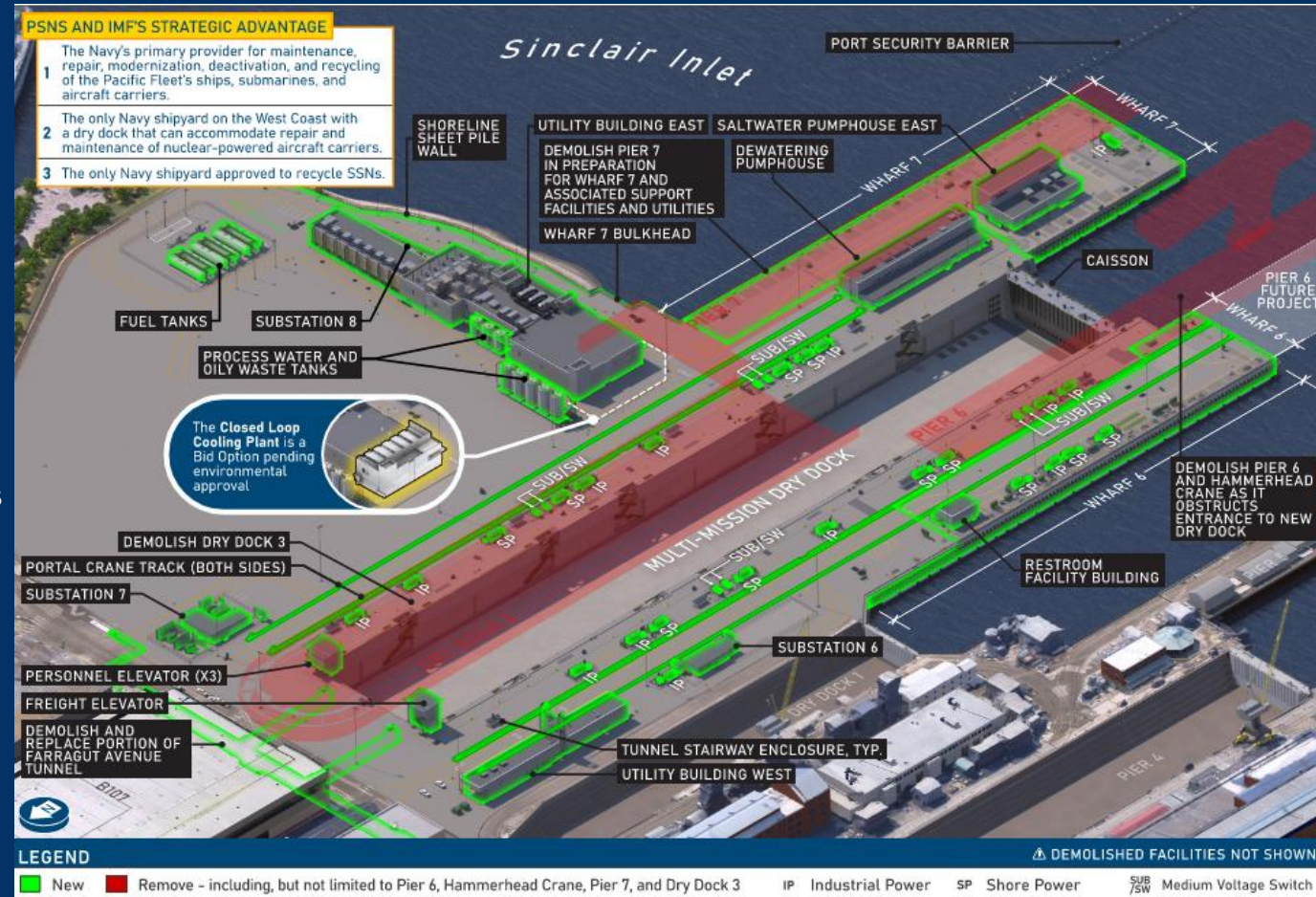
Dry Dock Size Comparison

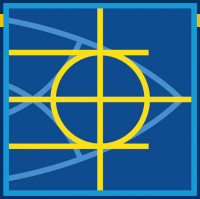
		PNSY DD1 P381	PHNS DD5 P209	PSNS M2D2 P454
 804,750 tons 435,000 cubic yards	Concrete Pentagon <i>Total concrete used</i>	0.5x	0.6x	2x
 10,100 tons	Steel Eiffel Tower <i>Weight of iron</i>	5x	6x	11x
 235,941 cubic yards	Volume Roman Colosseum <i>Volume above arena</i>	0.7x	0.6x	2.5x
 9.5 Megawatts	Electric Empire State Building <i>Peak electrical demand</i>	0.4x	0.8x	3x



Major Above Grade Features

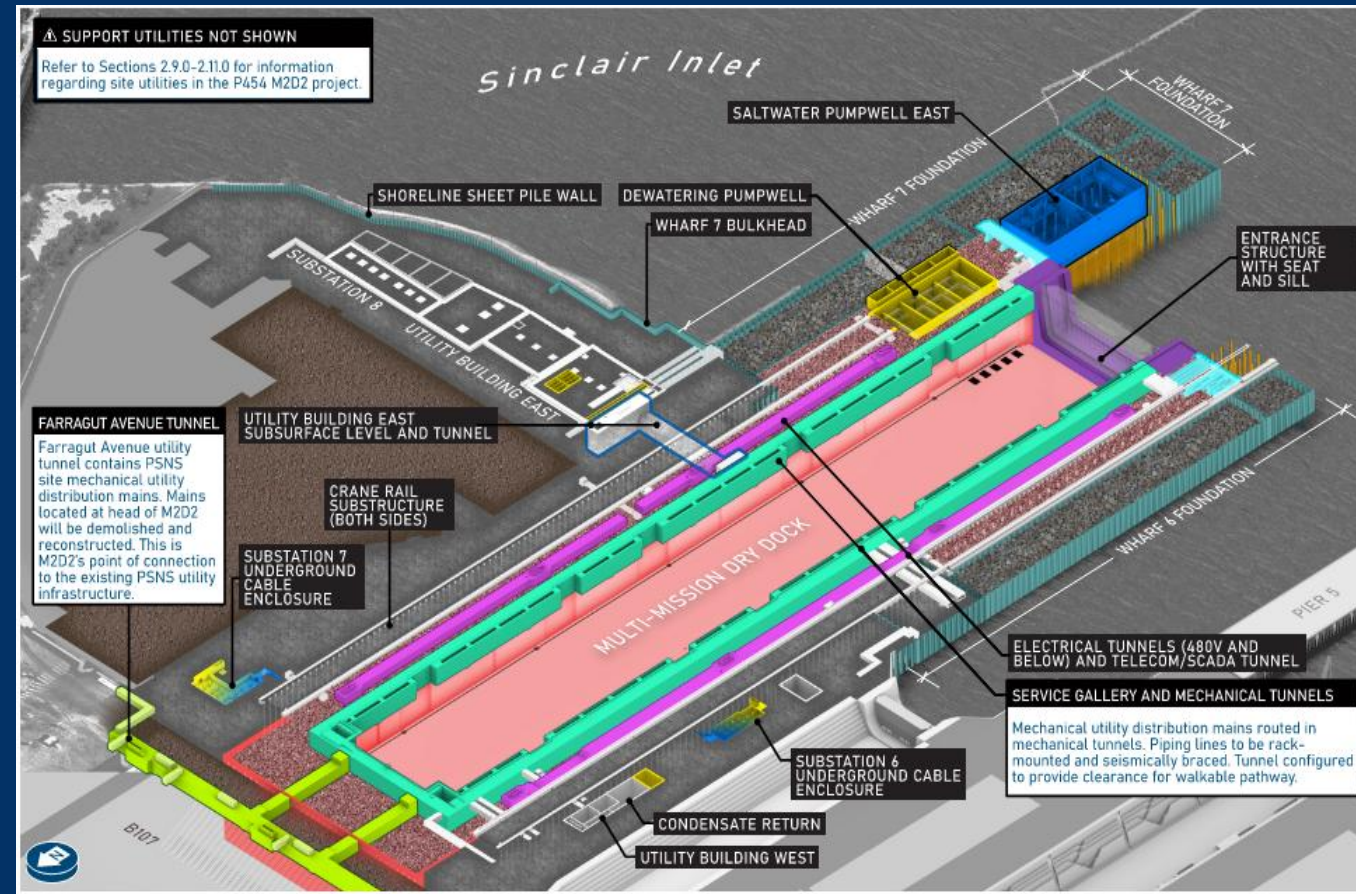
- Dry Dock
(1,210' L X 210' W)
- 40' Gage Crane Track
- Support Buildings
- Process Water & Dewatering Pumphouse
- Process Water Collection Storage Tanks
- Freight and Personnel Elevator
- Stairway to Dry Dock
- Seat & Sill Structure
- Caisson



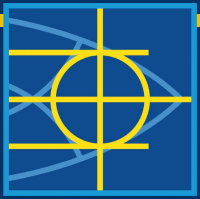


Major Below Grade Features

- Upland Slurry Wall
- Permanent Cofferdams
- Saltwater Pumpwells
- Process Water and Dewatering Pumpwell
- Engineered Backfill
- Crane Track Piles
- Apron Piles
- Entrance Wall and Caisson Seats
- Electrical, Mechanical, and Telecom Tunnels
- Pressure Relief System
- Farragut Utility Tunnel

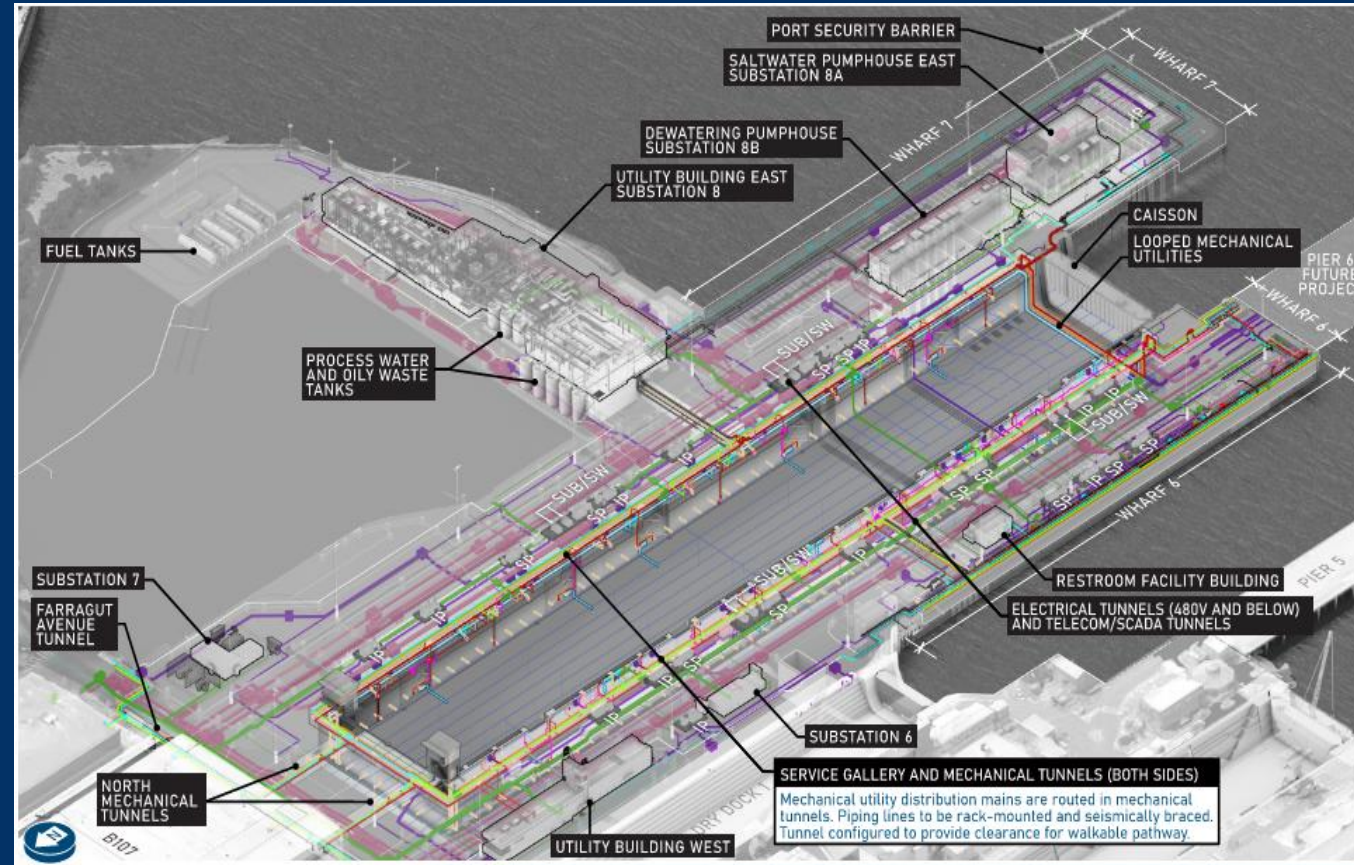


LEGEND					DD - Dry Dock DWC - Double Wall Cofferdam	
Vessel Support	Entrance Structure	Farragut Avenue Tunnel	Utility Building East Tunnel	Native Material	Wharf Piles	
DD and Site Support	Galleries and Mech. Tunnels	DWC with Improved Ground	Dry Dock	Backfill Material		
Vessel, DD, and Site Support	Electrical Tunnels	Concrete Shoring Wall	Ground Improvements	Quay Wall		

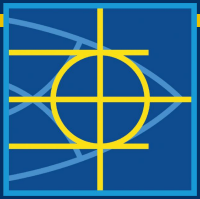


Process Systems and Utilities

- Closed Loop Cooling
- Shore Chilled Water
- Saltwater (Closed Loop Cooling Backup)
- Saltwater (Fire Protection)
- Low-pressure & High-pressure Compressed Air
- Non-potable Freshwater
- Oily Waste
- Potable Freshwater
- Pure Water
- Sanitary Sewer
- Steam
- Industrial power
- Shore power



LEGEND			
Pressure Relief System	Pure Water	Telecommunication	Nonpotable Fresh Water
Closed Loop Cooling	Potable Freshwater	Electric (Low Voltage)	Industrial Power Subs
Sanitary Sewer	Compressed Air	Electric (Medium Voltage)	Shore Power Subs
Saltwater	Steam	Oily Waste	MV Substation Switch



Construction Constraints

Shipyard nuclear ship maintenance must continue, and local community must operate

- 15,000 shipyard workers – largest in the Navy
- Maintaining CVNs, SSBNs, SSGNs, and SSNs
- Limited security access (Controlled Industrial Area)
- Limited laydown area
- Aged utilities and buildings
- Commercial and hydroculture waterway
- Competing construction programs
- Surrounded by local community



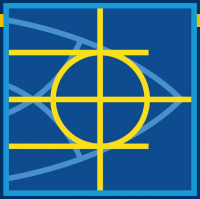
PSNS Dry Dock 3, future site of M2D2



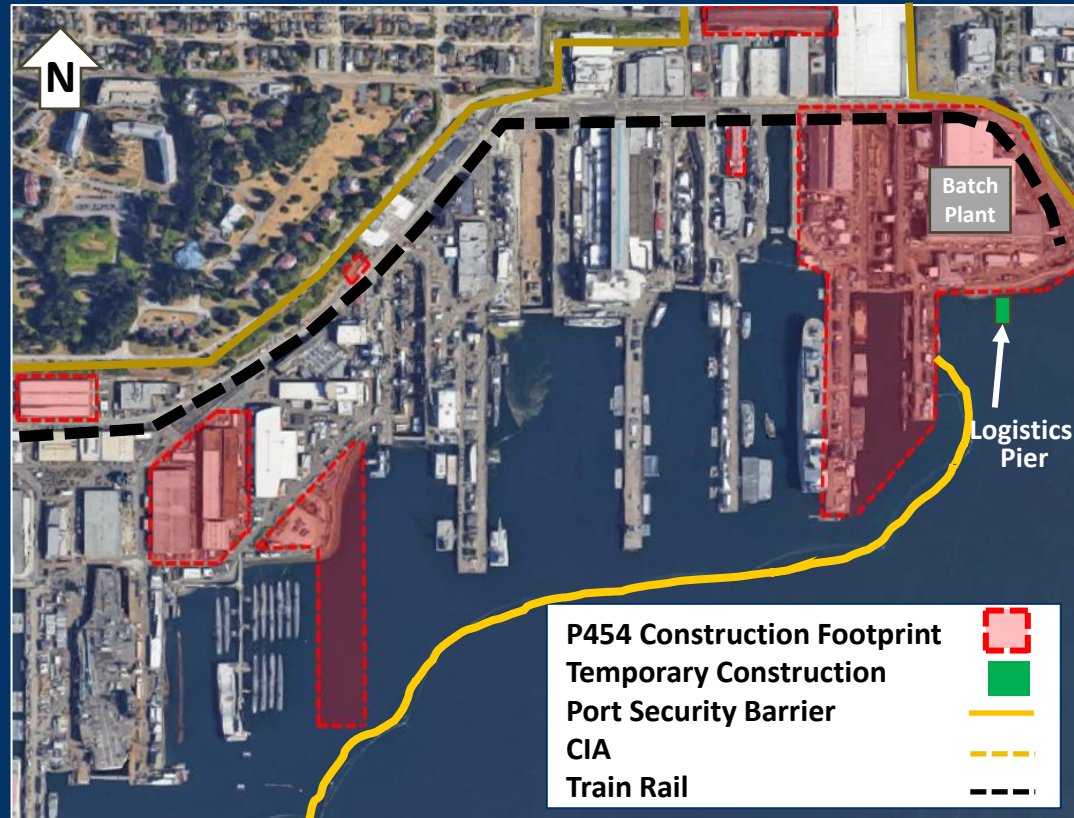
PSNS Dry Dock 6 with USS Nimitz



Sinclair Inlet, Bremerton WA



Construction Logistics



Providing Solutions



Relocating 1,355
Shipyard Workers



240K sqft
Leased



Offsite Multi-use Area
For Contractors



Temporary Mooring
For Construction

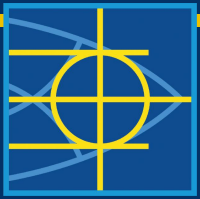


Train Rail
Availability in CIA

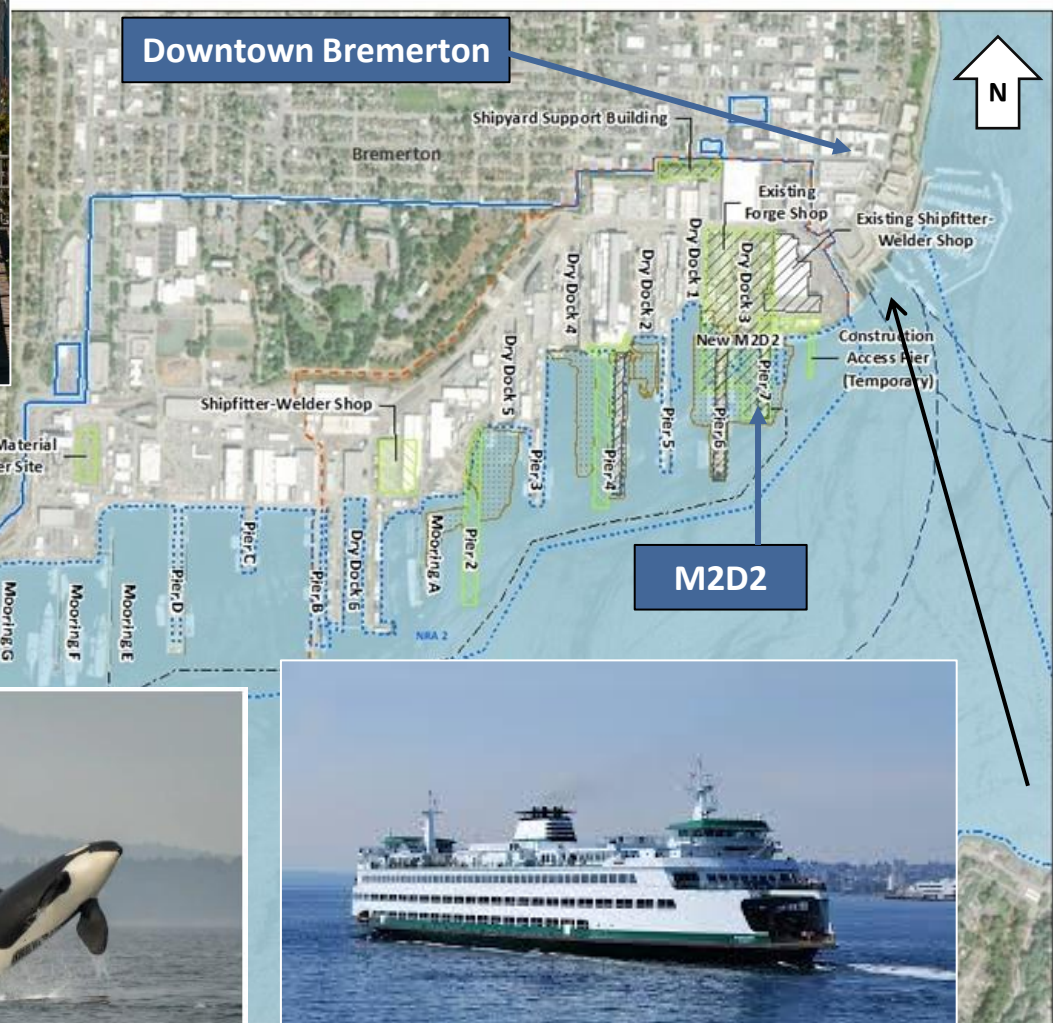


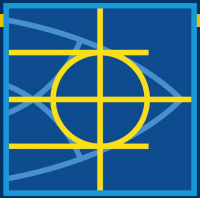
Batch Plant
Dedicated to P454

What you build and how you build it



Community Considerations





P454 Primary Facilities

Multi-Mission Dry Dock (M2D2)

Reinforced concrete, pressure relieved graving dry dock with caisson for FORD and NIMITZ class maintenance, with supporting electrical and mechanical systems



Caisson

Pier 2

136KSF reinforced concrete with pile caps and precast deck panels, replacement for Piers 6 and 7

Shipyard Support Building

280KSF facility consolidates multiple functions and existing buildings



PSNS Piers 6 & 7



Metal Forger

Forge & Heat Treat Facility

78KSF facility (at Bangor)

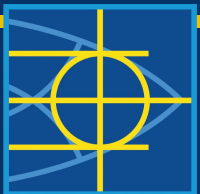
Radio Hill Complex

494KSF laydown area and employee support building (at Bangor)

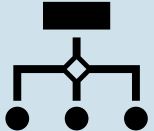
Shipfitter & Welder Facility

310KSF heavy industrial shop

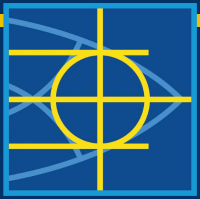




Industry Feedback – What do the best owners do?

				
Project Information	Contracting	Access	Collaboration	Government Management
➤ Soil Borings ➤ Utility Connections ➤ Equipment Specifications ➤ HazWaste Rules ➤ Contractor Laydown	➤ Source Selection ➤ Economic Price Adjustments ➤ IDIQ Items ➤ Contract Structure ➤ Bonding ➤ Delivery Milestone Achievement Award	➤ Installation (gate) access ➤ Laydown areas ➤ Harbor security ➤ Safety procedures ➤ Ferry schedule ➤ Work hours	➤ Site Logistics ➤ Design files ➤ Alternative technical solutions ➤ Value engineering ➤ Submittals ➤ Schedule and invoice format ➤ Contractor synchronization	➤ OICC and A/E staffing ➤ Electronic systems ➤ Staff Availability ➤ Staff location ➤ Speed of response

What can the Navy do to reduce risk and uncertainty?



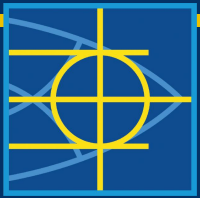
Environmental Impact Statement Status

Draft EIS Released: 18 July 2025 (complete)

Draft EIS Public Comment Period Ended: 3 September 2025 (complete)

Final EIS Public Release: 7 September 2026 (pending)

Anticipated Record of Decision: 30 October 2026 (pending)



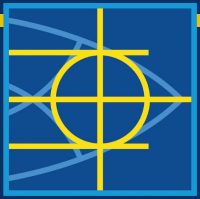
The Way Ahead

PRELIMINARY ACQUISITION STRATEGY

- Multiple primary construction contracts
- Various multiple award or single award contract vehicles
- Competitive best-value source selection contracts
- Set-asides for small business
- Additional contracts for environmental work
- Early contractor involvement throughout design
- Fixed price contracts potentially with delivery milestone achievement awards
- Economic price adjustments and indefinite quantity elements

NOTIONAL SCHEDULE

- *FY25: Preparatory leases, renovations, and moves*
 - *500+ people to relocate*
- FY27: Forge Shop, Shipfitter/Welder Facility, Pier 2 construction (in-water work), demolish facilities
- FY28: Demolish Piers 6 & 7, dredging, logistics pier
- FY29: Cofferdam, dredging
- FY30: CVN 79 first pier side maintenance
- FY32: Demolish DD3
- FY33: Dry dock structure
- FY35: Utility buildings and cranes
- FY38: Completion



For additional information see:
<https://multimissiondrydock.com/>

Navy Panel Audience Q&A

Speakers: David Gibson, Bryan
Cochran, CAPT Brown and CDR Daly

