

Maritime

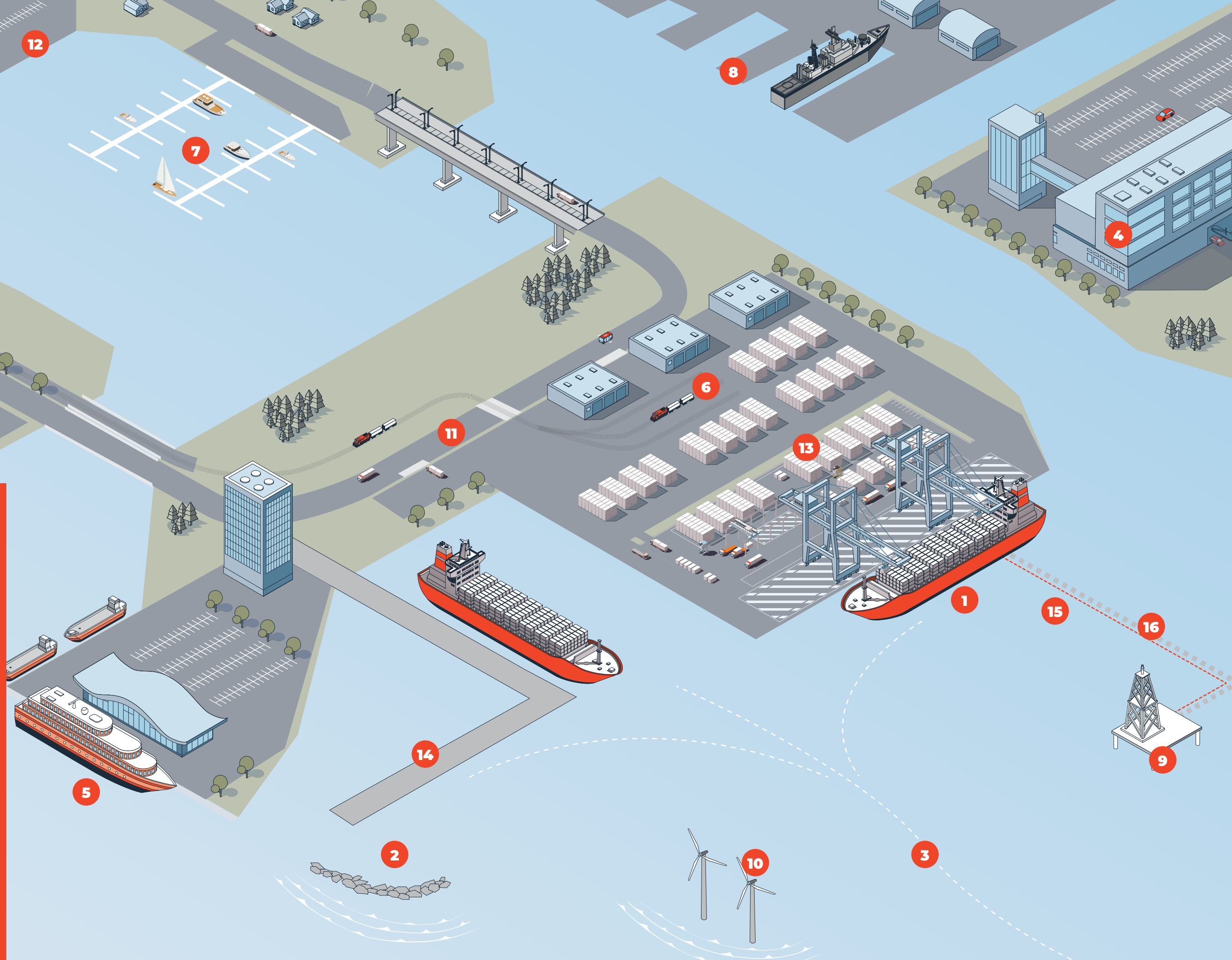
Local Experience,
Global Knowledge



Services

LEGEND

- 1. Berths
- 2. Breakwaters
- 3. Dredging
- 4. Buildings
- 5. Cruise and ferry facilities
- 6. Intermodal yards
- 7. Marinas
- 8. Military facilities
- 9. Offshore platforms
- 10. Offshore wind
- 11. Roads
- 12. Shipyards
- 13. Backlands
- 14. Wharves, quays, jetties
- 15. Subsea cables
- 16. Subsea pipelines



Our Focus: The Future of Maritime

WSP works with federal authorities, public port authorities and private terminal operators to plan, design and manage construction of all types of maritime infrastructure including greenfield projects and upgrade/repair and rehabilitation projects. We are at the forefront of engineering marine projects worldwide. We deliver innovative, value-engineered outcomes that benefit from 6+ decades of experience and a deep understanding of the challenges and risks faced by the maritime market.

WSP combines technical, financial and operational expertise to assist project stakeholders with the commercial decision-making process while minimizing investment risk. In addition, WSP is an industry-leader working with reputed contractors in the alternative delivery sphere to help execute signature design-build maritime projects worldwide.

Our maritime specialists are committed to delivering Future Ready® solutions that cater to a rapidly changing business landscape. We integrate climate, resiliency and sustainability principles at every phase of our projects.



OUR SERVICES:

- Port planning and analysis
- Engineering
- Environmental services
- Program and construction management
- Strategic advisory



CLIENTS:

- Government/federal authorities
- Public port authorities
- Container and bulk terminal operators
- Shipping lines
- Freight/logistics operators
- Investors/lenders
- Contractors



FACILITIES:

- Military facilities
- Container, bulk and cargo terminals
- Ferry terminals
- Cruise/passengers facilities
- Piers and wharves
- Offshore facilities



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Port Planning and Analysis

WSP's maritime team has assisted port authorities and terminal operators to evaluate, plan and develop efficient and modern terminals. We provide real-world expertise from either a "big picture" or detailed perspective, on state-of-the-art automated facilities, conventional terminals and transitions in-between. After analyzing and planning the operations and required infrastructure, we evaluate every element of a port or terminal for future needs to optimize its function and provide flexibility and quality in operation.

WSP's proprietary suite of port and intermodal terminal planning tools, known as PRIME (Port, Rail, Intermodal Modeling Engine), allows us to configure terminal plans, estimate their capacities and forecast capital and operating costs. PRIME integrates a port's geographic information system (GIS) with visualization skills and WSP's experience in developing and implementing asset management plans. PRIME integrates physical planning, operational analysis, economic assessment, and environmental impact estimation into a single platform, allowing coherent analysis of all key drivers and variables. The result provides project stakeholders with an accurate understanding of the pros and cons of terminal operations and helps identify potential capital expenditure and maintenance programs.

- 01 Manzanillo International Terminal**
Location: Colon, Panama
Services: Design of Container Terminal Expansion in Multiple Phases
- 02 Seagirt Marine Terminal**
Location: Baltimore, Maryland, USA
Services: Program and Construction Management

Our Services

We offer a comprehensive range of specialty consulting services concerning lifecycle management of maritime projects, including strategy and operations, investment advice, venture optimization, financial modeling and business case development, public-private advisory and transaction services. Our teams have developed an unparalleled database for trade, port and shipping markets, together with wide-ranging expertise. We advise port authorities, terminal operators, governments, shipping lines, logistics operators and the investment community.

SPECIALIZED EXPERTISE:

- Asset management
- Financial modeling
- Due diligence
- Business case development
- Grant support
- Marine carrier studies



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Engineering

WSP provides preliminary and detailed engineering design services for rehabilitation, upgrades and designs of military facilities, wharves, berths, storage yards, rail tracks, container cranes and truck gate systems. Our designs not only account for the safety requirements of our clients but are cognizant of environmental requirements.

We have experience designing maritime infrastructure serving Post-Panamax ships and associated ship-to-shore container crane operations along with civil infrastructure configured for conventional and electrified rubber tired gantries, automated and rail mounted gantries, automated stacking cranes, reach stackers, top, side, and front-end loaders handling both conventional and reefer container stacks. We have been involved in front-end planning and design for some of the largest container terminal ports nationally and internationally. In addition, we have worked on container terminal designs for some of the world's largest container terminal operators.

WSP is a proponent of providing sustainable and resilient designs and always considers the impact of the marine environment on design, construction and operation of terminals. We produce simulations of coastal environments in order to understand the coastal processes specific to a project, or to test the effect of any change in the physical environment on its natural features or on any built assets.

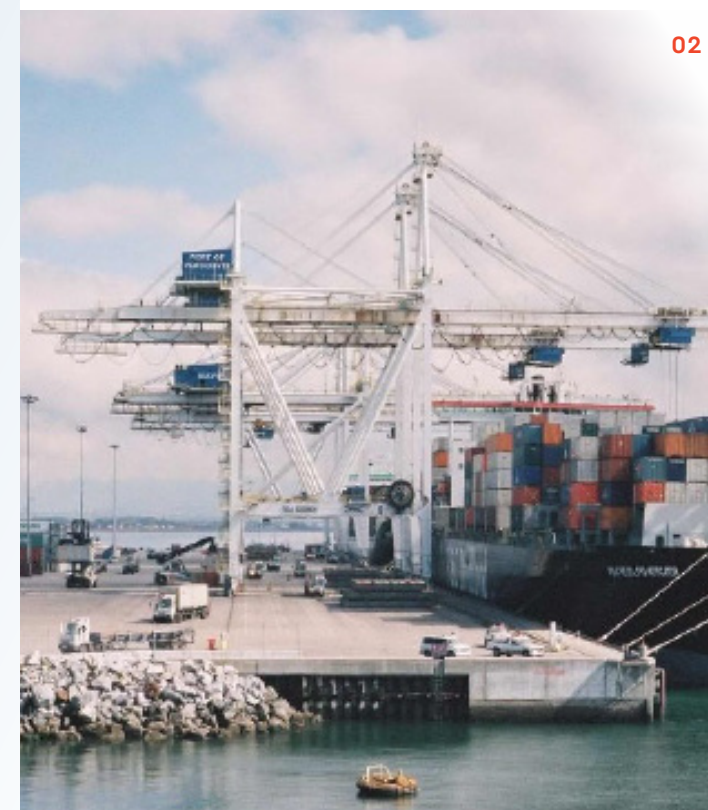
ENGINEERING SERVICES:

- Structural
- Civil and utilities
- Mechanical
- Electrical
- Geotechnical
- Coastal
- Navigation and dredging
- Condition assessment

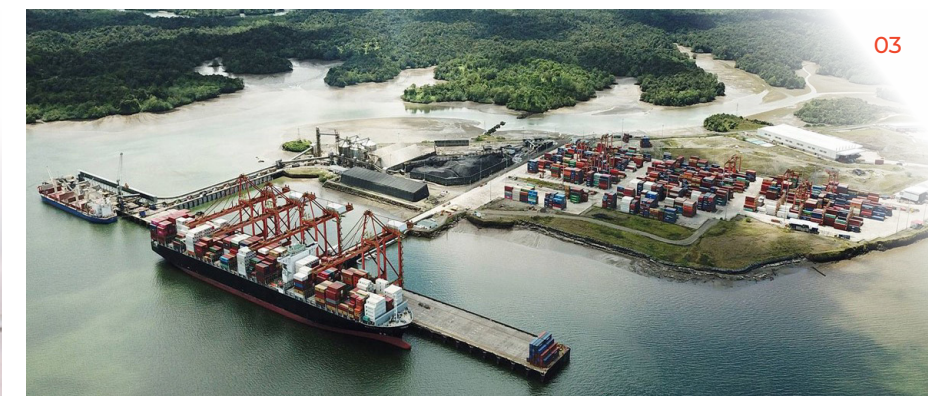
Environmental Services

We offer a comprehensive range of environmental services including environmental management, permitting, sustainability, energy, climate change risk solutions and ground risk and remediation. Our versatility in supporting the development and maintenance of marine structures, ports, container terminals and general cargo handling facilities enables us to guide clients through the legislative and regulatory process and prepare necessary documentation.

- 01 Turning Notch Expansion**
Location: Port Everglades, Florida, USA
Services: Bond Engineering, Design of Expansion, Condition Assessment
- 02 Deltaport Berth 3**
Location: Port Metro Vancouver, British Columbia, ISA
Services: Design of Caisson Wharf
- 03 SPIA Container and Boscoal Bulk Handling Terminals**
Location: Aguadulce, Colombia
Services: Detailed Design of Wharves and Upland Terminals
- 04 Lekki Multipurpose Deepsea Port**
Location: Lagos Free Trade Zone, Nigeria
Services: Definitional Design, Design Reviews, Construction Coordination



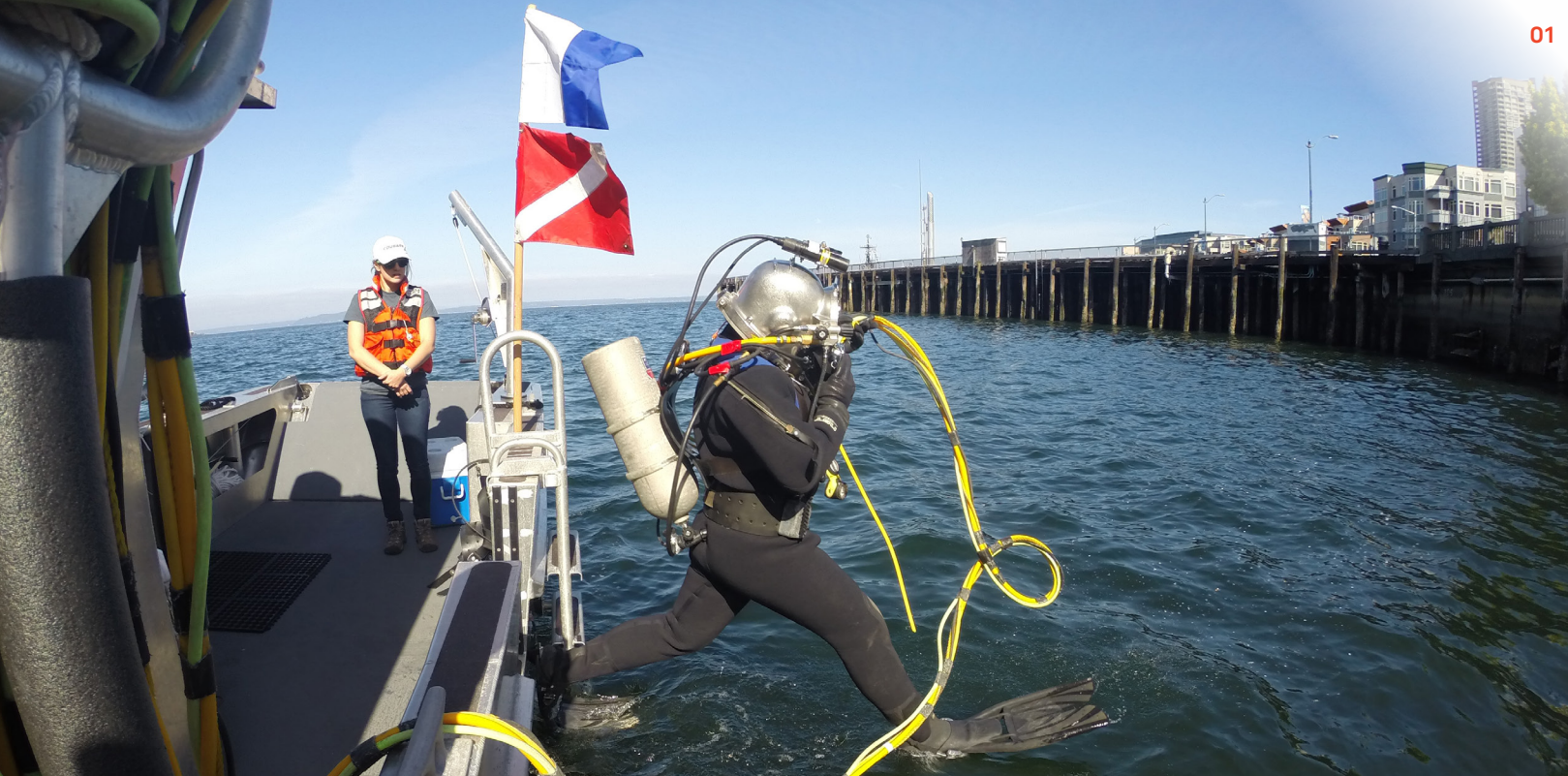
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Waterfront Asset Management

WSP is an industry leader in the development and growth of advanced asset management practices. We help clients solve real-world challenges and improve the services they deliver through more efficient and economic use of the fleet, facilities, and infrastructure they manage - doing the right work at the right time, and for the right cost. Current maritime clients for asset management services include the MDOT Maryland Port Administration and the Port Authority of New York and New Jersey.

WSP's deep understanding of asset class life cycle needs - combined with technology and business transformation leadership - enables our clients to improve performance, reduce life cycle costs and minimize risk. Our full suite of services is designed to support your organization along its asset management improvement journey. From initial assessment and guidance through business transformation program management and project delivery, technology advisory and training, our services are designed to efficiently transition best practices into your organization.

Our experts include authors of and key contributors to international guidelines and best practices development, including:

- International Standard for Asset Management Systems ISO 55001:2014
- Federal Transit Administration's Transit Asset Management Guide
- National Cooperative Highway Research Program's guidance on ancillary assets
- International Infrastructure Management Manual

Structural Condition Assessment

For both above and below water condition assessments, WSP's team of experienced engineer-divers complements the firm's engineering design and analysis services for waterfront structures, marine facilities and bridges. For more than 40 years, we have provided underwater inspections across the United States and abroad. Past inspection projects include federal, state, municipal and private marine structures in Seattle, Tacoma, San Francisco, San Diego, Houston, Fort Lauderdale, Norfolk, and New York. Outside the US, our teams have performed assessments in Mexico, Honduras, Columbia, Panama, and Iraq.

Our condition assessment team, primarily consisting of licensed civil and structural engineers, identifies damage and deterioration, assesses cause and structural significance of observations, and develops repair design details to get facilities operational quickly and cost effectively. In addition to our preparation of construction contract documents, WSP's inspection reports provide clear and concise assessments of: remaining service life, existing structural capacity, and estimated construction cost for repair and rehabilitation. These reports provide above water and underwater photographs to communicate condition severity and color CAD sketches with locations of damage at the facility.

- 01 Port of Tacoma**
Location: Tacoma, Washington
Services: Underwater inspection
- 02 Port of Tacoma**
Location: Tacoma, Washington
Services: Repair design inspection
- 03 Red Hook Container Terminal**
Location: Brooklyn, New York
Services: Substructure repair design



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Military Facilities

The WSP Maritime group has a long history with the United States Navy, Coast Guard and Army Corps of Engineers executing specialized waterfront design projects necessary to support the unique requirements of our armed forces. Our work ranges from planning through concept and final design and construction support services. Our team performs significant technical studies and condition assessment providing evaluation of structures both above and below the water surface. Our experience includes repairs and new design at shipyards, design of homeporting facilities for a wide range of vessels including submarines, aircraft carriers, offshore patrol cutters and others, as well as dredging design for vessel operations. Our extensive experience in the repair and design of dry docks, piers and other shipyard facilities is being used for the Shipyard Infrastructure Optimization Program (SIOP) to provide design services at our nation's Naval shipyards.

- 01 Tuxpan Port Terminal**
Location: Tuxpan, Veracruz, Mexico
Services: Complete Design of Greenfield Container Terminal
- 02 Dry Dock No. 6, Puget Sound Naval Shipyard**
Location: Bremerton, Washington, USA
Services: Detailed Design of Repairs

Facilities We Serve

WSP is fully capable of designing any marine terminal to meet client operational requirements within budget and schedule. WSP's maritime practice provides services ranging from inception to operation of a marine terminal and includes feasibility studies, site selection, appraisals, preparation, commissioning, operations, overall planning assessments, detailed design and construction supervision. WSP offers comprehensive services for both greenfield and brownfield terminals.

CARGO TERMINAL:

- Container
- Break bulk
- Dry/liquid bulk

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Intermodal Terminals

Our planning and design expertise covers all transportation modes involved in an intermodal terminal, including rail and roads and highways to develop 360° solutions. This approach provides rapid access to warehousing and logistic providers. Our services also extend to the infrastructure and activities that interface with ports, including landside transport and distribution of goods, logistics, supply chains and automated information services.

- 01 Port of Balboa Phase 4 Expansion**
Location: Balboa, Panama
Services: Detailed Design of Container Terminal Expansion
- 02 Port of Manzanillo Terminal Repairs, Upgrades, and Expansion**
Location: Manzanillo, Colima, Mexico
Services: Post Earthquake Repair, Upgrade, and Expansion of Container Terminal

Container Terminals

We work with our clients including some of the world's largest container terminal operators to help find the best use of available CAPEX, and provide designs compatible with container handling operations. No two terminals are the same and our team is focused on providing terminal specific solutions accounting for geography, site conditions, market volatility and key international supply chain developments. Most importantly, our engineers are trained to design terminals and their associated wharves, berth depths, container/upland yard, container handling equipment and gate systems in an optimal manner. Several of our recent terminals have been designed for the larger modern ships and the associated increased container traffic in a cost-effective and efficient manner.



Navigation and Dredging

WSP provides comprehensive solutions for navigational and remediation-related dredging and berth deepening, as well as dredged material disposal options. In addition, our maritime experts are able to work with port operators and contractors in selection of the most appropriate dredging scheme accounting for site and geotechnical conditions, prevailing environmental permitting issues including disposal, and overall best practices. In addition, we routinely perform a detailed analysis of environmental conditions and the type of ships that are expected to use a planned channel to help assess various route options and rank them in terms of navigation safety and security, with a view to minimizing dredging volumes, costs and environmental impacts.

Bulk Material Handling and Storage Facilities

We have extensive experience in planning, design, operation and capacity assessment of dry and liquid bulk terminals. We focus on configuring terminal facilities and associated landside and ship loading/unloading equipment with cargo handling needs, storage requirements and access to highway/intermodal facilities to provide clients with a competitive edge. We have handled a diverse portfolio of products for dry bulk including cement, aggregates, coal, coke, clinker and more. WSP has been involved in liquefied natural gas, oil, kerosene, diesel, benzene, asphalt and other liquid bulk maritime infrastructure projects. Our maritime team has developed strong relationships with cargo handling specialists and we are at the forefront of planning and designing both greenfield and brownfield marine terminals for handling bulk cargo.

- 01 Berths 1 and 2 Widening and Expansion**
Location: Barranquilla, Colombia
Services: Detailed Design of Bulk Handling Wharves Expansion
- 02 Port of Corpus Christi North Bank Cargo Dock 16**
Location: Corpus Christi, Texas, USA
Services: Detailed Design of Greenfield Cement Import Dock





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Cruise Terminals

WSP's in-depth involvement with the sector has given us a wide understanding of the differing requirements for embarkation and port-of-call terminals. We have significant experience supporting the major and developing cruise ports in the U.S., Central America and the Caribbean. We are ideally positioned to serve both port authorities and private cruise operators in the development of wharves, jetties, shore protection and landside facilities.

- 01 Seattle Ferry Terminal at Colman Dock**
Location: Seattle, Washington, USA
Services: Detailed Design of Replacement of Ferry Terminal
- 02 Nassau Cruise Port Expansion and Upgrade**
Location: Nassau, Bahamas
Services: Detailed Design of Cruise Port Upgrades and Expansion

Ferry Terminals

WSP has intimate understanding of ferry terminal operations and has been the trusted design services provider for Washington State Ferries, the largest U.S. ferry operator and second largest vehicular ferry system in the world. WSP is currently executing the replacement and upgrade of an existing ferry terminal in Seattle and has previously been involved in several projects domestically and internationally.



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About WSP USA

WSP USA is the U.S. operating company of WSP, one of the world's leading engineering, environment and professional services firms. Recognized on [Fast Company's Brands that Matter List for 2022](#) as a top Community-Minded Business, WSP in the U.S. brings together engineers, planners, technical experts, strategic advisors and construction management professionals who are dedicated to collaborate in the best interests of serving local communities. WSP designs lasting solutions in the buildings, transportation, energy, water and environment markets. With approximately 16,000 employees in 300 offices across the U.S., WSP partners with its clients to help communities prosper.