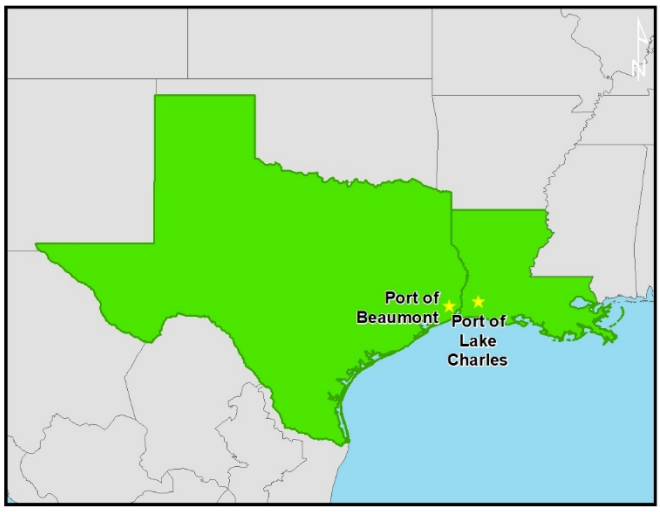
BLENDING NEW DEVELOPMENT WITH AGING INFRASTRUCTURE

2023 ALPHA CLASS



PROFESSIONAL PORT MANAGER (PPM) PAPER

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PORT OF BEAUMONT

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ABSTRACT

This paper explores the challenges and lessons learned from blending new development with aging infrastructure, based on the experiences of two neighboring ports on the Gulf of Mexico. Ports often face limitations in resources and property for expansion, necessitating the revitalization of existing facilities while maintaining operations. The objectives of this paper are to guide evaluating whether to maintain, upgrade, or replace a facility, to present real-world case studies of successful projects that enhance customer service and drive regional economic development, and to discuss financial challenges faced by Ports and propose solutions for undertaking large-scale infrastructure projects within existing constraints.

The paper focuses on the process of revitalizing outdated structures to accommodate modern vessels and cargo. It includes example projects that guide readers through decision-making, design, and construction phases. These example projects yielded experiences and knowledge that led to the creation of the factors to consider and information within the Master Planning and Capital Improvement Program sections. The target audience includes ports across North America dealing with similar challenges. The insights shared in this paper offer practical knowledge for decision-making in the context of aging infrastructure.

This paper serves as a resource for port professionals, reflecting on past experiences and incorporating lessons learned into future brownfield development. It provides valuable information for project planning in the context of aging port infrastructure.

BIOGRAPHY

BRANDON BERGERON, P.E.

Mr. Bergeron is the Director of Engineering at the Port of Beaumont where he is responsible for overseeing and coordinating capital projects, major maintenance, as well as master planning and future project development. With nearly 20 years of experience in the ports and maritime industry, Mr. Bergeron previously worked as Engineering Manager for Lanier & Associates Consulting Engineers, Inc. where he served as an engineering consultant and senior project manager on a variety of marine terminal projects for public ports and private industry in the Gulf Coast and East Coast. Mr. Bergeron is a cum laude graduate of Louisiana Tech University with a Bachelor of Science in Civil Engineering and is registered as a professional engineer in the State of Texas and Louisiana.

Located in Southeast Texas, the Port of Beaumont is a political subdivision of the State of Texas and operates as a hybrid (operational and landlord) deep draft port. The Port's eight-terminal facility houses 11 berths, more than 100 acres of storage, and direct service to three Class I rail carriers. In FY 20/21, the Port of Beaumont's annual tonnage was 4,424,804. The Port of Beaumont has been recognized for years as the nation's #1 Strategic Military Port.

NICK PESTELLO, P.E.

Mr. Pestello is the Director of Engineering Maintenance, and Development at the Port of Lake Charles where he is responsible for all capital and maintenance projects, future project development, and grants management. He has been at the Port for the last ten years working closely with numerous engineers, consultants, and contractors to plan, construct and deliver projects to meet the Port's needs. He received his bachelor's degree in civil engineering from McNeese State University; he's a licensed PE in Florida, Louisiana, and Texas, as well as a member of the 2023 class of the Professional Port Manager program through the American Association of Port Authorities (AAPA).

The Lake Charles Harbor & Terminal District, also known as the Port of Lake Charles (POLC) is a deep-water port located in Lake Charles, Louisiana, on the Calcasieu Ship Channel, along the northern stretch of the U.S. Gulf Coast. The Port opened in 1926 and today is the 12th-busiest port district in the nation based on tonnage, as ranked by the U.S. Army Corps of Engineers. It also was named by Forbes magazine as the seventh-fastest growing seaport in America. The Port manages the Calcasieu Ship Channel, which runs inland 36 miles and extends out into the Gulf of Mexico another 32 miles. The Lake Charles Harbor & Terminal District is a public body created by the Louisiana Legislature. The District encompasses 203 square miles in Calcasieu Parish and operates on 5,420 acres.

PROJECT EVALUATION

FACTORS TO CONSIDER

Around the world, ports are facing the critical challenge of addressing aging infrastructure while trying to expand and maintain operations. As such when developing a project associated with older infrastructure detailed **condition assessments** are needed to determine the best path forward. A critical first step in the decision-making process is the current physical condition of the facility. Ports should conduct routine inspections and assessments of their facility's foundations, superstructures, fender systems, utilities, and all other supporting components. These inspections are typically performed on a five-year cycle for waterfront facilities and are used to identify any damage or signs of deterioration, structural issues, or safety hazards that could compromise the functionality of the facility.

In addition to the current physical condition, another factor to consider is maintenance. The **maintenance history** of a site could provide valuable insights into its past performance and identify reoccurring issues, deficiencies, or patterns of items that require attention. For instance, continuous fender repairs in one location as the result of a change of operation can result in a project[1] to accommodate this new unloading method. Another example might include repetitive damage to columns within a warehouse or storage shed from forklift operators which may necessitate a project that either involves installing operational controls or safety barriers to protect the columns and may even lead future designs of similar buildings to be clear-span structures completely void of any interior columns, as seen later in the section describing the

[1] For the purposes of this paper, a "project" shall be used to reference any repair, rebuild, or new development to rehabilitate or enhance a port facility.

Port of Lake Charles's New Warehouse at City Docks project. This clear-span example is typical when replacing older warehouses with modern structures, as evidenced by the Port of Beaumont's incorporation of a clear-span structure in another project not mentioned in this paper.

While most likely identified during the facilities inspections or maintenance history, another item to consider when evaluating the need for a project is **compliance with industry safety standards and regulations**. Ports must strive to be a safe environment for employees, contractors, customers, and in many cases the general public, and comply with relevant codes and regulations. Safety is an ongoing requirement to mitigate risks, and regular reviews of safety standards may reveal areas in need of repair or replacement to improve compliance with industry standards and overall safety within the port.

Following the physical assessments, the **operational efficiencies**, resiliency, and modernization potential should be evaluated. Examination of the operational processes could identify inefficiencies or potential choke points with the flow of cargo within the port. By understanding the workflow of each cargo, ports can identify opportunities for projects that may enhance operations, increase utilization, optimize efficiency, and improve resiliency to minimize risks and possible downtime. For example, the Port of Beaumont's Buford Rail Yard Interchange Track project mentioned later in this paper was developed primarily to solve a choke point in the Port's inbound and outbound lead rail tracks.

Compatibility of existing infrastructure with modern maritime and cargo requirements is an essential component of the evaluation process. Also, commonly known in the industry as **future-proofing**, this process is a proactive measure to fortify existing infrastructure to withstand

the potential demands of the industry. For example, as vessel sizes, cargo handling equipment, and technological advancements evolve, Ports must continuously evaluate whether their facilities can meet these ever-changing demands. If necessary, upgrading or modernizing existing infrastructure may be considered to align with industry standards and improve overall performance. While each of the projects mentioned later in this paper includes some element of future-proofing, one such common example of future-proofing can be found in the Port of Beaumont's Main Street Terminal 1 project where the design included an increased loading capacity and apron size to accommodate future larger cargos and mobile harbor cranes.

Simultaneously, ports should explore **environmental considerations** during the evaluation process. Assessing the environmental impact of the port could involve analyzing its carbon footprint, waste management practices, and ecological sustainability. This should also include resiliency regarding environmental conditions, including possible sea level rise, hurricanes, flooding, ice storms, structural corrosion as well as other natural disasters. Ports are increasingly expected to adopt green practices, and the project evaluation phase presents an opportunity to identify areas where sustainability and resiliency initiatives can be incorporated into redevelopment plans. Introducing green infrastructure and sustainable practices can enhance the site's long-term viability and minimize its future environmental impacts. New technologies, such as composite timbers manufactured from recycled plastics and used on the Port of Beaumont projects discussed later in this paper, are prime examples of incorporating green infrastructure into new development.

The evaluation process should also include analyzing current and future **capacity requirements** for both operations and infrastructure. Similar to the future-proofing section

above, a facility's capacity should also be evaluated to handle future growth. Ports can identify possible limitations and explore alternative solutions. This may include expanding existing facilities or repurposing areas to accommodate increased capacity requirements effectively. For example, a terminal built for a specific cargo that has now shifted elsewhere could be repurposed to handle a new cargo with only a few minor adjustments. Additionally, as shown in the Port of Lake Charles's New Warehouse at City Docks project example below, a project could be built to allow for higher cargo stacking heights by increasing the floor loading capacity, allowing for additional storage capacity without increasing the project footprint.

Lastly, a **benefit-cost analysis** (BCA) should be performed to make an informed decision about a project. Ports should evaluate the financial effects of maintaining, upgrading, or fully replacing a facility. The BCA may consider numerous items such as revenue generation, increased operational efficiency, job growth, regional impact, and any other pertinent port-specific items. Knowing the potential return on investment for both the port and the region, allows ports to make informed decisions regarding a project. While a BCA can be a beneficial tool for ports to evaluate all projects, each of the example projects mentioned later in this paper that obtained grant funding was required to conduct a BCA as part of their grant application process.

Figure 1: Factors to Consider in Project Selection Process

As shown in the figure above the evaluation process for considering the maintenance, upgrade, or replacement of aging facilities is a multi-layered undertaking. Additionally, there are situations where circumstances such as structural failures, unsafe work conditions, and non-compliance with industry standards may escalate the need for a project. For example, it is easy to understand the desire to immediately rebuild after a catastrophic event, such as a hurricane. However, thinking strategically about how to rebuild a project in such a way that it blends in with the future of a port can be seen as a "silver lining" to an otherwise dire situation. By systematically evaluating these various aspects, ports can make informed decisions that align with their long-term goals. This comprehensive evaluation process ensures continued operations, resilience, and sustainability in the face of aging infrastructure.

MASTER PLANNING

In addition to evaluating the need for a specific project, it's important to consider a Port-wide strategic plan[2] or master plan[3] before moving forward. When evaluating a large-scale rebuild or repair as well as new development, it is important to consider whether or not the project should be included in a master plan or undertaken outside of the Port's overall goals.

Because a master plan identifies short-term and long-term goals, strategic priorities, and overall vision, there may be occasions where the previously outlined **project evaluation** process may reveal that a project easily **aligns with a port's strategic priorities**. In these cases, including the project in the master plan will bolster the port's goals for development and establish the project as part of the port's short-term or long-term goals which may prove beneficial when seeking certain funding opportunities.

When adding a project to the master plan, the newly identified projects must be **compared with other potential projects and prioritized** based on their strategic fit, urgency, and feasibility. Further prioritization for projects in the short term will be done annually or bi-annually in the capital improvement program phase.

When considering a project oftentimes the request or justification may come from a single source thus creating a one-sided project goal. That is why it is important to **engage with key stakeholders** to gather input on the proposed project scope. Different perspectives should be considered from both internal stakeholders and external stakeholders (such as customers, community members, regulatory bodies, and partners) as appropriate. Seek feedback to address

[2] For the purposes of this paper a "strategic plan" shall be used to reference an overall Port plan that includes a market study, existing and future cargos.
[3] For the purposes of this paper a "master plan" is in reference to an overall Port project plan that outlines future development.

concerns, and ensure alignment with stakeholder expectations. A typical example of stakeholder input that must be considered, and a contributor to all of the following example projects, is how the project affects ongoing port operations and the customers served. As shown in the Port of Beaumont's Buford Rail Yard Interchange Track project, rail movements had to be maintained as a result of input from the rail carriers and customers. Another example is the Port of Lake Charles' New Warehouse at City Docks project, the intended tenant has light-sensitive cargo and request that the skylight not be included in the design. This minor comment modified the design from what was previously a standard port-wide specification.

Regularly **review and refine** the master plan to ensure its alignment with the current goals. As new information becomes available or circumstances change, reassess the inclusion of the project and its alignment with the evolving goals and priorities.

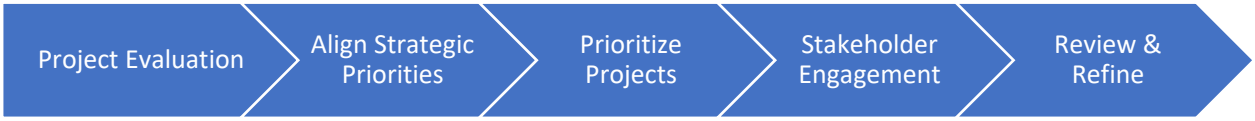

Figure 2: Master Plan Project Inclusion Evaluation Process

By following the guide above, ports can make informed decisions on whether to include a project in the master plan. It will also ensure that the master plan remains relevant, strategic, and aligned with the port's objectives while considering its needs and opportunities for growth. While each port's governance model can differ, the all-encompassing master plan is typically commissioned and approved by a Board or Commissioners; whereas, individual projects are managed by port leadership and staff.

CAPITAL IMPROVEMENT PROGRAMS

Following the evaluation of projects and incorporating them into a master plan, the next step is determining whether a project should move from the Master Plan to the Capital Improvement Program (CIP). Capital Improvement Programs are typically updated on an annual or bi-annual basis to incorporate the highest priority projects for the upcoming planning term. Similar to the master plan evaluation, including a project in the CIP will involve a systematic evaluation of the project's necessity, alignment with the port's strategic goals, priority, and financial impact.

As mentioned throughout this paper, a project's **financial implications and availability of funding** are critical components of the planning process. The estimated costs, potential sources of funding (such as grants, capital reserves, or external financing), and the Port's financial capacity are sometimes the main factor when deciding to move forward with a project. The project's potential return on investment, cost-effectiveness, and long-term financial sustainability should always be considered to determine if the project can be accommodated within the Port's CIP budget. A cash flow analysis can also be a critical component in this step. Consider the project schedule, forecast project expenses, and reimbursement timing to consider the Port's ability to move the project forward. For example, most grants are reimbursement only and require the port to submit invoices and documentation before receiving payment.

Evaluate the **short-term feasibility** of the project in terms of the various factors identified in the previous sections of this paper. The detailed analysis of the project's scope and objectives should now also include a more detailed review of the costs, risks, and resources required to determine if the project is realistic and executable within the port's current CIP funding.

Compare the proposed project with other projects within the Master Plan to prioritize investments. Consider factors such as urgency, impact, cost-effectiveness, and alignment with funding sources. This **prioritization** exercise helps identify the projects that should be included in the CIP based on their independent advantages and alignment with the Port's goals.

Similar to the master planning effort, **key stakeholders should be engaged** in the CIP decision-making process. As appropriate, seek input from relevant departments, staff, executives, and external stakeholders who may be affected by or have a vested interest in the prioritization of the project. Gather feedback, address concerns, and consider the perspectives of stakeholders to ensure buy-in and alignment with port priorities. As cargo and operations change, the priorities of stakeholders shift or sometimes go away completely in the ever-evolving maritime industry. Additionally, for some projects, an external stakeholder may be the general public or another public body, such as a regional economic development agency or neighboring municipality, in which case a formal public comment period and town hall type meetings may be required. The external comments could provide valuable input that affects the project scope, construction method, and overall likelihood of moving forward.

While not always a formal process, there should be a level of **review and approval** for moving projects from the Master Plan to the CIP. This may involve presenting projects and prioritization rationale to decision-making bodies, such as the executive team or a board of commissioners. Transparency in the decision-making process and prioritization of projects will ensure that the CIP is a unified path forward and not influenced by a person or group.

Regularly **monitor and update** the CIP to reflect changes in project status, funding availability, and needs. Maintain alignment with the Master Plan and regularly assess if projects should remain in the CIP based on their feasibility and current port goals.

Figure 3: Capital Improvement Program Inclusion Evaluation Process

Utilizing the steps above, ports can determine if a project should move from the Master Plan to the Capital Improvement Program based on evaluated data and not only a subjective opinion. This will ensure that projects in the CIP are strategically aligned, financially viable, and prioritized to support the Port's long-term goals.

FUNDING SOURCES

FINANCIAL CHALLENGES

Ports face significant financial challenges when undertaking large infrastructure projects within the constraints of an existing aging infrastructure footprint. These challenges stem from limited resources as Ports often have constrained financial capacity for capital investment, which can strain their budgets and impact other operational needs. Moreover, rehabilitating or replacing aging infrastructure incurs substantial costs due to the need for extensive repairs, upgrades, or complete reconstruction, especially when multiple facilities or components require attention simultaneously. Additionally, there is the potential for lost revenue while the facility is completely or partially out of service for the duration of the construction work.

Securing funding for these projects is complex, relying on a combination of sources such as government grants, public-private partnerships, bond issuances, and tariffs or user fees. The availability and timing of these funding sources can be uncertain, posing challenges for long-term financial planning. To ensure economic viability, Ports must carefully assess the potential return on investment, revenue generation capabilities, and their ability to attract and retain customers. Conducting comprehensive financial feasibility studies can be crucial to ensure that these projects yield long-term sustainability and generate sufficient revenue to cover initial investments and ongoing operational costs.

To address these financial challenges, ports may consider various funding solutions, some of which are outlined in the following sections.

FEDERAL GRANTS

Ports can actively seek out and apply for federal government grants that are specifically designated for infrastructure development. Grants, such as the Port Infrastructure Development Program (PIDP), the Rebuilding American Infrastructure with Sustainability and Equity (RAISE) grants, and the Port Security Grant Program (PSGP), provide funding opportunities for ports. Since the titles and qualifications of these programs change with each administration and potentially annually, ports should monitor federal grant programs and tailor their project proposals to align with the current eligibility criteria and funding priorities.

While numerous federal grant opportunities are available each year, each program has specific criteria for eligibility and a very competitive application process, most requiring a Benefit-Cost Analysis (BCA). Potential projects must also meet specific regulations and requirements, including strict environmental compliance and utilizing material sourced from American manufacturers, which can be challenging for specialty maritime components such as mooring bollards and fender equipment. For ports, the federal NEPA process for environmental compliance can add time to a project that could put other funding and private partnerships in jeopardy. Many Ports do not have the staff or expertise to apply or manage the many requirements associated with federal funding and must hire consultants to assist, which incurs additional costs to the project that must be considered. Some programs will reimburse these expenses but not all.

To ensure a seamless reimbursement process for all portions of the grant, all requirements of federal grants should be carefully managed before any expenditures are made and monitored closely throughout the duration of the construction effort.

STATE GRANTS

In addition to federal grants, many states have grant programs that apply to Ports. These state programs typically have fewer challenges and less competition as opposed to federal programs. This allows projects to move faster and easier through the application and reimbursement phases, which can be critical when dealing with projects that involve the rehabilitation or repair of aging infrastructure.

In Louisiana, the Port Construction and Development Priority Program is a competitive program administered by the Louisiana Department of Transportation and Development. The program intends to distribute allocated state funds to port projects that have the highest return on investment as determined by technical and financial feasibility and overall state impacts. The program specifically emphasizes the need to equitably distribute state funds and avoid impacting other porta within the state. A rigorous analysis of forecasted project benefits is undertaken to ensure that project impacts are positive and beneficial to the State. To be eligible for funding, a port must submit a formal application that is reviewed, evaluated, and prioritized without any political influence.

In Texas, the Texas Department of Transportation's Seaport Connectivity Program and Maritime Infrastructure Program have been established to provide ports with a means for securing funds. Historically, the Seaport Connectivity Program has used surplus budgetary funds to assist ports with projects outside their secured areas that both increase efficiencies for operations and relieve congestion or optimize traffic patterns for the surrounding public. The newly established Maritime Infrastructure Program expands the Texas government's support of seaports to also fund projects inside the gates and allow for projects specific to port operations

to be competitively considered for funding. In the case of both Texas grant programs, all projects require applications to be submitted and evaluated like those of the Louisiana programs. In the case of the Texas grants, the requirements for monitoring and administering the grants are less cumbersome than federal grants.

PORT FUNDING

In addition to federal and state grants, most ports utilize other funding options to either complement grants or fully fund a project. Due to the complications previously discussed with grants, these other funding options can help expedite and simplify a project depending on the funding source.

Many ports can levy a tax to assist in the maintenance of their facilities or ship channel. The tax revenue is typically added to the port's coffers for various uses.

Bonds can also be a strategic way of financing large-scale projects or a compilation of key projects. In some cases, the voting public may authorize a port to utilize levied taxes to issue general obligation bonds for funding projects. Ports may also utilize revenue bonds, often in partnership with Port customers or tenants, which repay investors through future revenues as opposed to public funds.

Through operating terminals and leasing property, Ports generate revenue and act similarly to private businesses. This revenue can and should be reinvested back into the Port's assets.

ALTERNATE FUNDING

A simple approach that is often utilized to implement large infrastructure projects is breaking down the project into phases to manage financial impacts. This allows the costs to be

spread over an extended period. The phased implementation also provides the opportunity to assess the project's success and adjust plans accordingly before committing to the entire project. In some instances, breaking down a project into phases over some time could provide benefits for the securing of a variety of grants to help offset the Port's share of costs for the project. A downfall of this approach is the continued construction over long durations, construction adjacent to ongoing operations, and newly constructed facilities.

Ports can establish financial partnerships with other stakeholders, such as local governments, regional development agencies, or transportation authorities, to share the financial burden of infrastructure projects. Collaborative funding arrangements can leverage collective resources and expertise to achieve shared goals.

Collaborating with private sector entities can provide financial and operational expertise for large infrastructure projects. Ports can enter public-private partnerships (PPPs) where private investors contribute funding in exchange for long-term leases, operational rights, or a share of revenues. PPPs can help alleviate the initial capital investment on behalf of the port and accelerate a project. PPPs can also think strategically and maximize funding opportunities using various grants, bonds, and revenue of the partners.

EXAMPLE PROJECTS

The following section includes insights into how ports are managing the juggling act of redeveloping antiquated structures to accommodate new modern vessels and cargo while managing funding and maintaining operations. Example projects have been provided to share experience in the process of moving from project selection, funding, design, and continuing through construction completion. These examples, as well as the projects at the authors' respective ports, have provided invaluable experiences to create and shape the aforementioned factors to consider, master planning, and capital improvement program guidance. Each example project shared below carries its own unique set of challenges associated with aging infrastructure, and how moving forward with a project such as these impacts decisions on funding, design, contracts, and construction.

PORT OF BEAUMONT EXAMPLE PROJECTS

Main Street Terminal 1

Background & Project Evaluation

The Port of Beaumont's Docks 2, 3, and 4 facilities, now known as Main Street Terminal 1, represent some of the oldest areas of the Port. Within the footprint of this facility are remnants of the oldest industrial and public wharves on the Neches River dating back to the early late 1800s and early 1900s when steamboats transported cotton and forest products. The evolution of the facility saw new structures built atop the previous generations of structures that existed within its footprint. The latest section of structures was built in 1955.

In 2012, the eastern end of the Main Street Terminal 1 collapsed into the water, taking with it the shed that was partially supported by the dock and the land. After a thorough investigation, findings appeared to indicate that the collapse was the result of corrosion of the steel pipe piles at the mudline brought about by elevated levels of galvanic action caused by scrap steel that had fallen to the mudline from ships at some point during the facility's history. Plans to rebuild the facility began to take shape but first came the challenge of demolishing the collapsed shed and sections of the dock to a point where it was stabilized and did not present a potential hazard to adjacent structures.

In 2013, an additional section of the dock collapsed without warning and appeared to indicate a progressive failure of the structure from East to West. The Port took action to saw cut the concrete wharf deck at a location outside of the failure to segregate the failing portion from the stable portion, all while working to maintain a safe working area of adjacent rail operations to the North and MARAD Ready Reserve Fleet vessels to the West. Initial budgetary estimates indicated that rebuilding the dock would be well over $50 million.

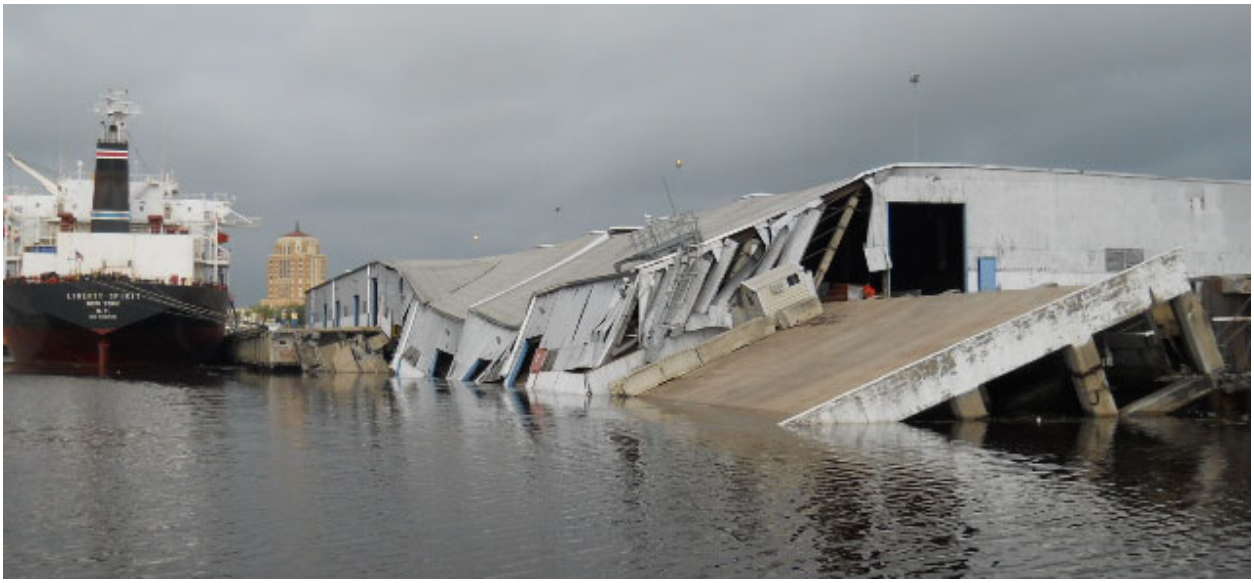

Figure 4: POB – Collapsed Dock 4 Structure & Shed – March 2012

Funding

In mid-2017, the Port began a campaign with local stakeholders and the public to explain the need to rebuild Main Street Terminal 1 and rehabilitate other key aging infrastructure. The Port successfully put forth a proposal that voters approved for $85 million in General Obligation Bonds towards the rebuilding of Main Street Terminal 1 and other key infrastructure projects within the Port. The Port was also successful in obtaining a $5 million grant from the Economic Development Administration (EDA) in 2018[4] to assist in funding Phase A of the project, and then in 2019 the Port was successful in obtaining an $18 million BUILD grant from the Department of Transportation[5] to assist in funding Phase B of the project along with other critical rehabilitation projects around the Port. Before releasing the two phases for bid, the overall project costs,

[4] This project was included in the 2018 Port of Beaumont Main Street Terminal 1 EDA Disaster Supplemental Grant Application
[5] This project was included in the 2019 Port of Beaumont Multimodal Corridor Expansion & Improvement Project BUILD Grant Application

including engineering and construction, for Main Street Terminal 1 were estimated at $14.8 million for Phase A and $62.6 million for Phase B, or $77.4 million total.

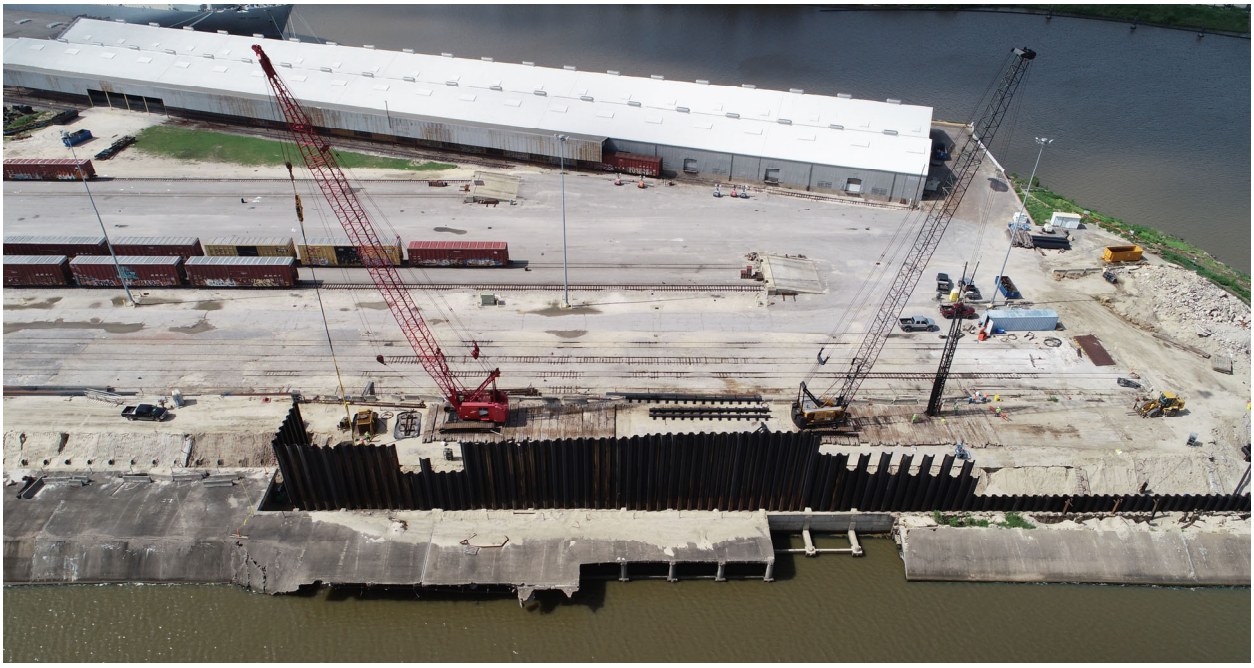

Figure 5: POB – Phase A Construction – New Bulkhead Installation – July 2020

Design & Integration with Aging Infrastructure

Due to the massive costs associated with rebuilding over 1,200 feet of wharf and shed structures, the engineering design and reconstruction effort was put on hold until a feasible funding method could be identified. Furthermore, because the facility would need to be completely rebuilt from nothing, it was determined that a phased construction approach would allow the project to move forward as efficiently as possible. Official design work on the new terminal began in 2017.

The first phase (Phase A) of the project would involve the demolition of the landside portions of the Main Street Terminal 1 dock and installing a new sheet pile bulkhead to serve as the shoreline stabilization and foundation for future landside construction. The second phase

(Phase B) would involve the complete demolition of the collapsed dock and the installation of the new state-of-the-art concrete pile support dock structure. Five years after the initial collapse, the design of the new Main Street Terminal 1 began in 2017.

When designing the new Main Street Terminal 1 facility, it was imperative that the project not only regain the 1,200 feet of berth space that were lost in the collapse but that the facility be built back in such a way that operations could be optimized, capacities could be increased, and modern construction methods and materials be utilized. To avoid the mechanism of failure that caused the collapse, the dock was designed as a fully concrete structure and the various previous generations of structures would be removed during the demolition effort. The new wharf was designed with an increased load capacity to match the newer Port facilities, and considerations in the design were taken to ensure the dock platform could support a mobile harbor crane. The project improved utility connections to pre-existing water and sewer piping in areas adjacent to the facility, and all above-ground electrical utilities were relocated below ground to provide additional clearance for large breakbulk cargo and more expansive storage opportunities in areas adjacent to the dock. Small details were evaluated from an environmental perspective to find additional ways to modernize the facility and be a good steward of the funds and natural resources available to us, such as recycled plastic composite timbers along the perimeter of the deck surface as opposed to creosote or green timbers and recycled plastic reinforcement fibers in the concrete topping slab as opposed to steel wire mesh.

Contract & Construction

The Port of Beaumont traditionally handles contracts by way of the design–bid–build methodology, and this was the case in both phases of this project. Despite a complicated

demolition effort and contending with various pile-driving obstructions during both phases, the contract methodology itself did not bring about any unique challenges to the project.

As mentioned above, contending with obstructions during pile driving was a significant challenge during both phases of this project. In Phase A, the Contractor discovered previously undocumented timber bulkheads and tie rods from one of the previous iterations of the facility. As work progressed, over 100 years of history at this facility presented itself in ways that were both nostalgic and frustrating. In Phase B, the demolition of the collapsed structure was tedious, and the Contractor utilized inventive methods to efficiently break down and extract the collapsed dock and previous generations of structures, including hundreds and hundreds of timber piling and a timber bulkhead structure that had been fully submerged for decades, while maintaining safety and staying on schedule.

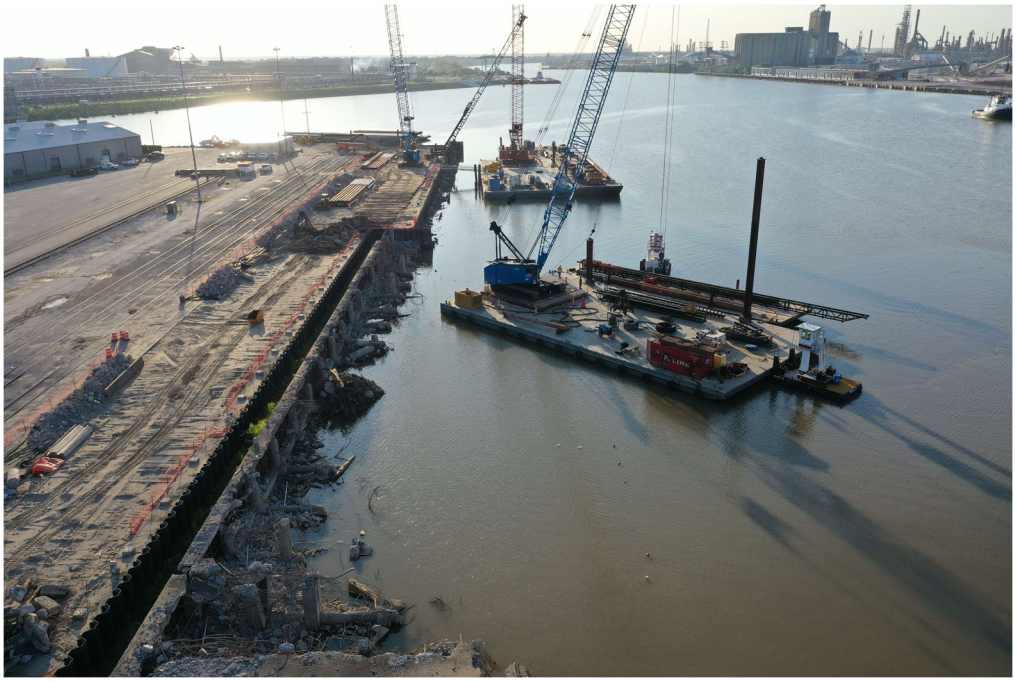

Figure 6: POB – Phase B Demolition – July 2022

Final contract totals for the construction of these two projects are estimated to be completed under budget at around $70 million, with Phase A completed in mid-2021 and Phase B estimated to be completed in mid-2024. Figure 7 shows the current progress, with all concrete piles being driven and concrete being laid for the new dock surface.

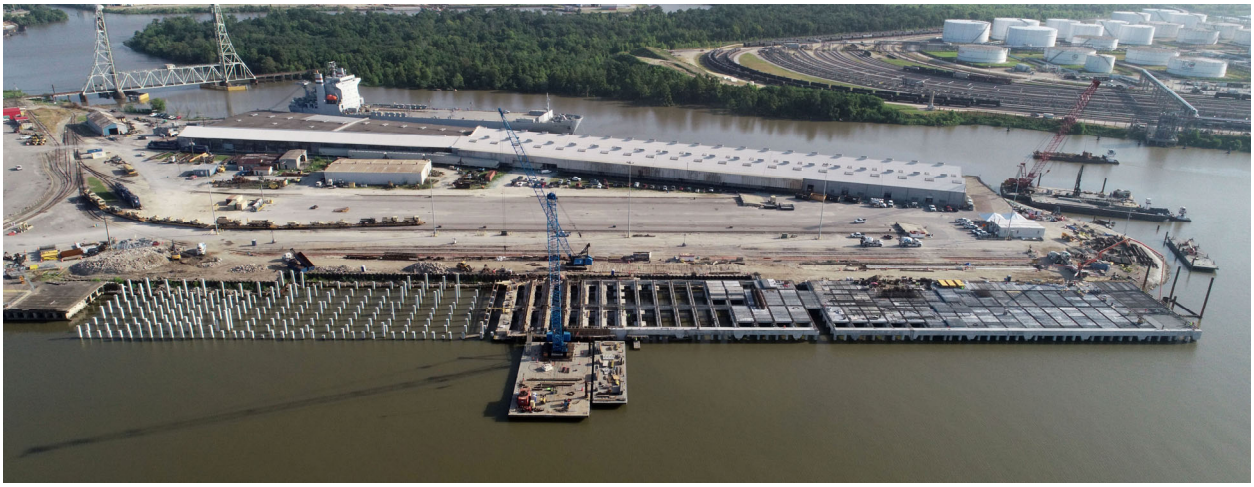

Figure 7: POB – Phase B Construction Progress – July 2023

Buford Rail Yard Interchange Track

Background & Project Evaluation

The Port of Beaumont has long benefitted from its proximity and connectivity to three Class I rail carriers, Union Pacific (UP), Kansas City Southern (KCS), and Burlington Northern Santa Fe (BNSF). All three rail carriers converge in Beaumont, TX, and all three can directly access the Port's interior railways that are operated and maintained by a third-party rail switching contractor. Along with the Port's growth came a need for customers to be assured that ample rail capacity was not only available for their rail cars to be stored, loaded, and unloaded but also for the inbound and outbound trains to be received or staged and switched efficiently into or out of the Port's interior rail system. With the increase in demand for rail activity from the Port's

forest products and wind energy customers, along with the necessary capacity to serve the United States military's transportation demands during surge activities, it became evident that the Port needed to expand its rail capacity in the form of a new lead track into and out of the Port.

The Port's rail facilities had been well maintained with minimal concerns regarding operational efficiencies; however, strengthening the Port's ability to receive and stage trains was a primary concern. In addition, truck traffic within the Port had taken its toll on the variety of rail crossings, facilitating a need to update the older timber and asphalt rail crossings to newer and more robust precast concrete rail crossings found in places throughout the Port where newer rail facilities or modern rail repairs had been made.

Funding

The Buford Rail Yard Interchange Track project was first added to the Port's Master Plan in April 2016[6] and the conceptual and preliminary engineering design began shortly thereafter. The project was put on pause as funding for the estimated $13.2 million project was evaluated. Furthermore, the successful receipt of grant awards for other critical infrastructure developments and large-scale execution of projects with Public Private Partnerships caused the rail project to become a lower priority. In 2019, after the successful campaign for voters to approve $85 Million in General Obligation Bonds and the Port's receipt of an $18 Million BUILD Grant that coupled the rail project as part of a multimodal project with the Port's other maritime rehabilitations, including Main Street Terminal 1, the project was back on track and the final

[6] The last Port of Beaumont Master Plan was presented in February 2014; however, the plan has been amended a few times to include major capital projects or maintenance activities that have arisen. Many funding opportunities require that the proposed project be included in a master plan or strategic plan.

phase of detailed engineering work began the same year. Figure 8 depicts the expansiveness of the project, with red track representing existing untouched infrastructure, blue track representing new rail (from the upper left to the far lower right of the image), and green track representing optimized switches within the Port's Buford Rail Yard.

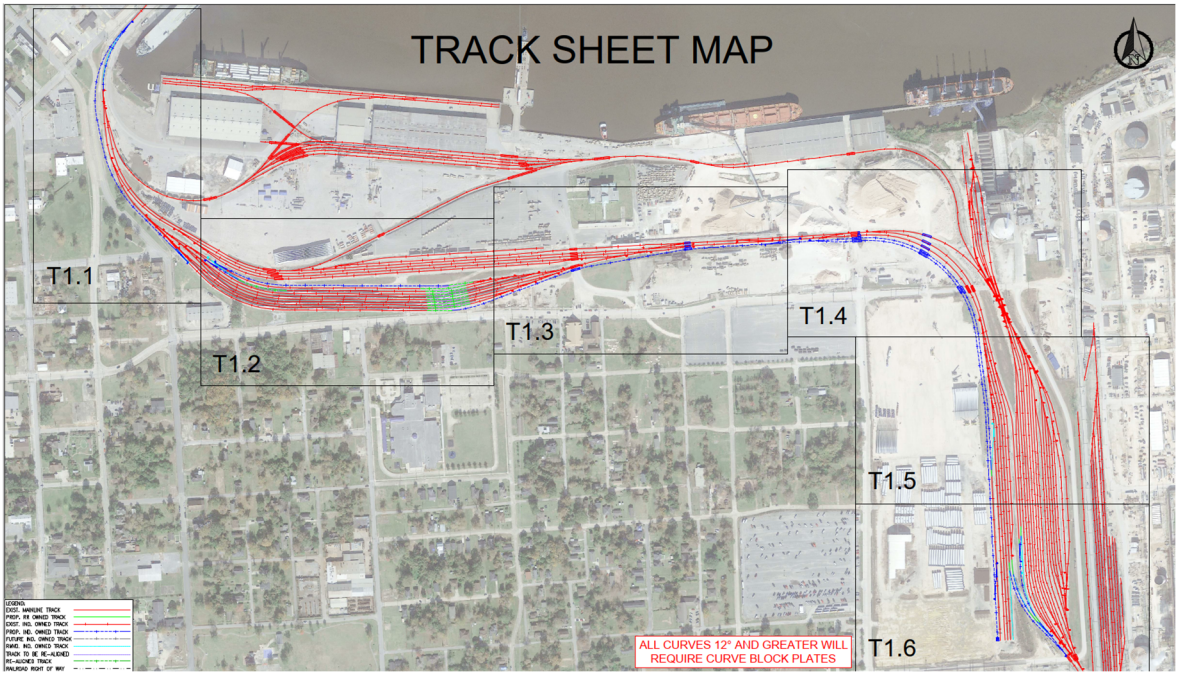

Figure 8: POB – Buford Rail – Project Footprint

Design & Integration with Aging Infrastructure

Due to the expansive footprint of the rail project within the Port's operating facilities, there were various design challenges to contend with. One such challenge involved the consideration of sequencing the construction in such a way that Port-wide operations would not be negatively impacted. Furthermore, various other construction projects were slated to happen concurrently with the rail expansion. Earthwork and subgrade preparations along the project footprint necessitated the Port to modify, reroute, or abandon various aging subsurface water, sewer, and stormwater lines. Buried fiber optic lines along the perimeter of the Port needed to

be rerouted to make way for the new rail, and low-hanging electrical and communication lines were moved underground to provide ample horizontal and vertical clearances. Finally, the required track geometry at the far west of the project required the Port's fence line to be expanded and occupy an existing city street, Sabine Pass Avenue. Figure 9 depicts a portion of Sabine Pass Avenue that was deeded to the Port by the City of Beaumont in exchange for some offsite waterfront property that the City will be used to develop a public park.

Figure 9: POB – Buford Rail – Usage of Sabine Pass Avenue

Contract & Construction

Like the Port's Main Street Terminal 1 project, the Buford Rail project was handled using the design–bid–build methodology, and we once again found success with no known issues.

At the time of this paper, the Buford Rail project is under construction and progressing on schedule; however, working on such an expansive project within an operating Port and around aging infrastructure is not without challenges. Figure 10 presents the far eastern portion of the

rail project and the construction taking place within some of the most heavily trafficked areas of the Port. To the left of this image is the Port's Lot 14 facility, which is currently designated as a Foreign Trade Zone (FTZ) and is housing project cargo for one of the southeast Texas LNG facility expansions. Contractors and cargo customers needed to work together to ensure that the FTZ cargo remained unimpacted by the project work and adjustments were made to the FTZ footprint to facilitate the work. To the right of this image is the Port's bulk aggregate handling facility and Lot 13 open storage lot, both of which serve upwards of over a hundred trucks daily. As is customary on projects at the Port of Beaumont, Port Operations, tenants, customers, and Contractors participated in weekly meetings to coordinate upcoming work to ensure that business can continue to flow while also meeting the critical project construction milestones.

Figure 10: POB - Buford Rail – Eastern End of Project

PORT OF LAKE CHARLES EXAMPLE PROJECTS

Berths 4, 5, & 6 Wharf & Shed Reconstruction at City Docks

Background & Project Evaluation

The Berth 4, 5, and 6 complex was constructed in three phases beginning in 1929 with various additions and improvements made over the years. Predominately used for breakbulk cargo, the 256,000 square feet continuous transit sheds were constructed of materials and methods common to that era, using timber piles, caps, and stringers with a concrete deck on the wharf and a timber bulkhead. Track rail service was provided to a landside rail apron, as well as a single truck loading dock.

Due to the age and type of construction materials, the wharf and shed are not well suited for today's modern cargo and equipment, particularly the floor capacity and low eve heights, because of this replacement of the facility has been considered for well over a decade, including in the previous strategic plan.[7] Studies were conducted to analyze the best approach for a facility of this size; however, the sheer magnitude of the capital investment required even with a phased approach continually delayed the start of the project. However, in August 2020, category 4 Hurricane Laura severely damaged the structure, tearing off exterior walls, portions of the roof, and the rail loading canopy rendering the transit shed unusable.

As a result of the hurricane, the project got the push it needed, and the Port began the preliminary design process as well as seeking funding assistance to replace the entire facility. Early estimates for the project were approximately $70 million, however as the project

[7] The most recent Port of Lake Charles strategic plan was presented by Martin Associates in June 2021.

progressed through the design process the cost estimate quickly grew to $113 million and eventually $131 million. This was a result of numerous factors however the largest contributor was the construction cost escalation that occurred nationwide from 2020 to now.

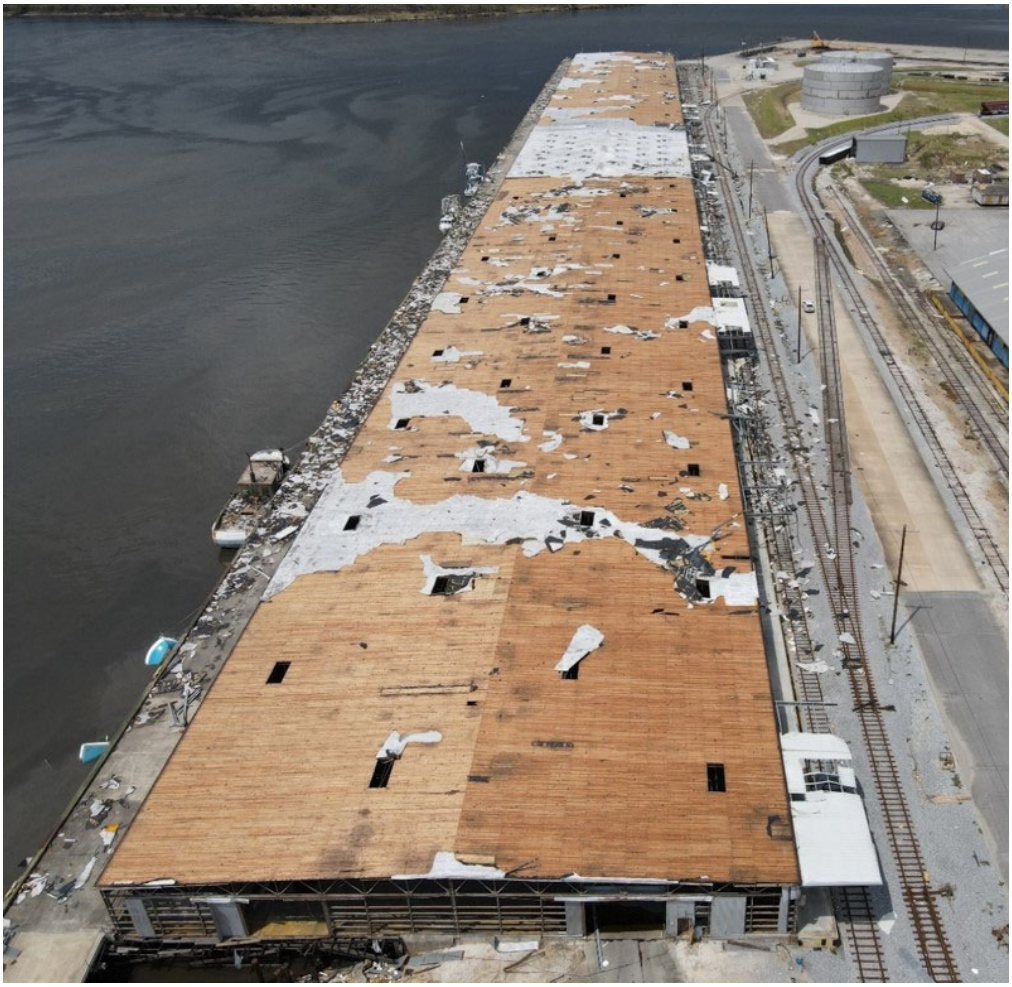

Figure 11: POLC – The Existing Berths 4, 5 & 6 Wharf and Shed Complex

The Project will include a new steel bulkhead, a pile-supported concrete wharf with sufficient load capacity for today's cargo and large equipment, a fender and mooring system to accommodate modern vessels, a roll on roll off (Ro-Ro) ramp at Berth 6 for special cargo, as well as a new clear span transit shed with a multi-bay truck dock and rail loading apron. Additional

improvements also include but are not limited to, a fire protection system, modern lighting system, security system, restrooms, and accommodations for future shore power.

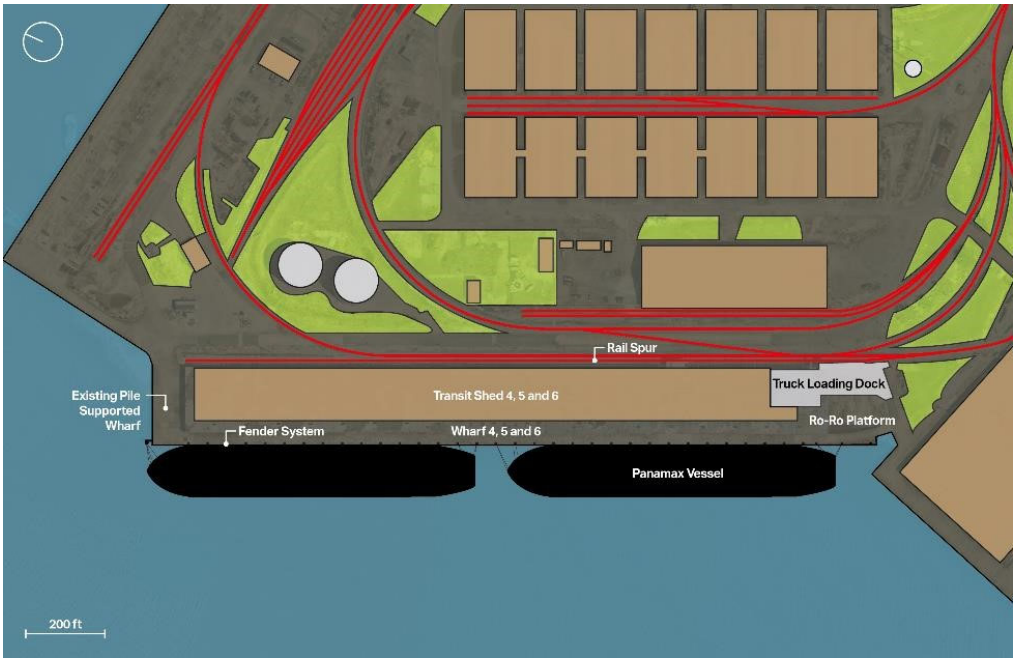

Figure 12: POLC – The Proposed Berths 4, 5 & 6 Wharf and Shed Complex

The new structure will allow for more efficient operations by providing a larger wharf apron and increasing usable area inside the shed by eliminating columns and allowing for higher stacking with the increased floor capacity. This will allow the District to continue long-term relationships with all of the operating stevedores and clients that utilize the complex for breakbulk cargo. Additionally, the new fender and mooring system will allow one of the current tenants to continue to receive ships for exporting their liquids for the life of their lease for the next 20-40 years.

Funding

With the extent of the hurricane damage the Port of Lake Charles exceeded its insurance coverage and was eligible for FEMA Public Assistance, however, it became clear very early that

FEMA would only cover the hurricane-damaged shed portion of the project and not the new wharf structure. Moving forward it was assumed that FEMA contribution would be approximately $10 million.

In addition to FEMA, a Port Infrastructure Development Program (PIDP)[8] grant application was submitted in 2022 in the amount of $25million, as well as a Louisiana Department of Transportation and Development (DOTD) Port Priority Grant application[9] in the amount of $15 million. The final funding request was the State of Louisiana Capital Outlay program in the amount of $96.4 million, this large request was made with the intent of reducing it if successful with the PIDP grant application. In the end, the PIDP grant application was not successful; however, all other funding sources were approved, allowing the project to move forward.

While the Port typically utilizes the design-bid-build procurement method, for a project of this magnitude and to ensure the goals of all parties involved are met, the Port is utilizing the Construction Manager at Risk (CMAR) procurement method. Due to the size and complexity of this project, CMAR allowed all risk items to be identified early in the design process which will aid in completing the project on time and under budget. This also allowed us to evaluate the cost estimates at three major milestones before receiving the 100% proposal which aided the numerous funding requests.

[8] This project was included in the 2022 PIDP Grant Application for Berth 4, 5, & 6 Wharf & Shed Reconstruction Project – Port of Lake Charles

[9] This project was included in the 2021 Louisiana Port Construction & Development Priority Program Grant Application – Port of Lake Charles

Design & Integration with Aging Infrastructure

The damaged and aging structure had numerous design challenges to consider. With the age of the structure, numerous repairs and upgrades have been made over the last 90 years, and the new additions create challenges when planning demolition, pile layout, and installation procedures. Geotechnical integrity must be considered for demolition, as pulling thousands of piles could destabilize the slope, but leaving it in place dictates pile and bent spacing. Further, the materials used during construction in the 1920s and 30s must be tested before demolition, as expected asbestos material was found in the building and will require remediation. Adjacent structures and operations must also be considered within an operating port. For this project a liquid terminal is still using Berth 4 for loading and must be relocated as part of the project before demolition. Adjacent railroads will need to be taken out of service to provide construction access. Another challenge is the wharf's location on a curve in the Calcasieu Ship Channel, where over the two-year design process Berths 5 & 6 were struck by tugs and rock barges four times. These allisions were considered for fender design as well as a change in operations to prohibit them from utilizing the facilities for a lay berth.

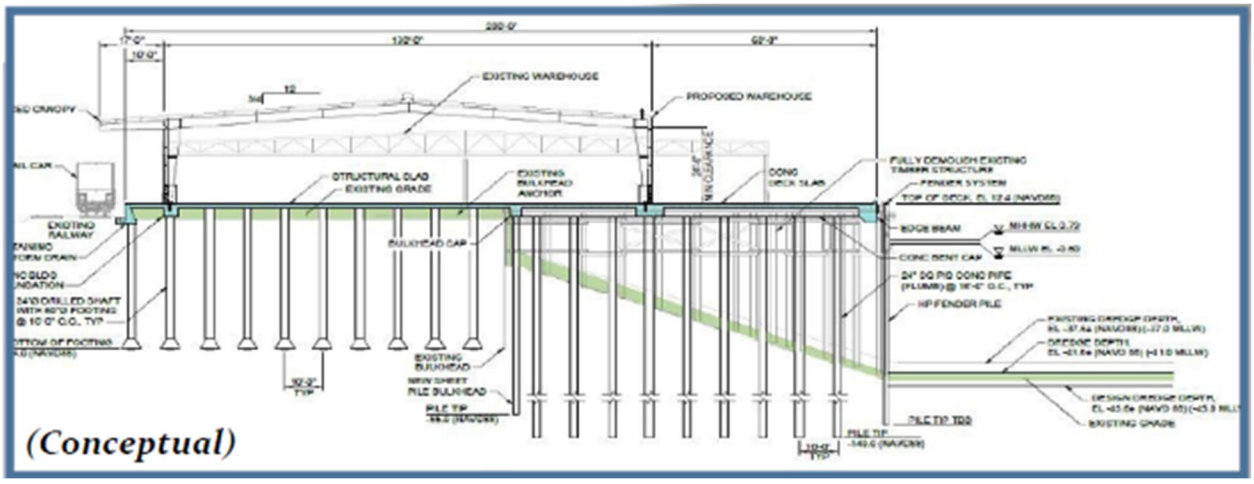

Figure 123: POLC – Conceptual Wharf Design

Contract & Construction

Through the CMAR process the Engineer, Owner, and Contractor were able to consider numerous design options and price them accordingly to generate the most cost-effective design and schedule for the large project. In June 2023 with funding secured the project was awarded to the CMAR Contractor for a Guaranteed Max Price (GMP) of $131,237,000 and is currently in the contract phase now. Notice to proceed is expected at the end of August with a three-year construction timeline.

New Warehouse at City Docks

Background & Project Evaluation

The Port of Lake Charles has had a long-term tenant utilizing numerous small warehouses, in an area of the Port known as the City Docks, to stage and inventory cargo before shipment. They provide lease revenue, storage fees, rail handling, and jobs. As such, in 2018 this project began with a Louisiana DOTD Port Priority application to replace four of the small back warehouses with one larger modern free-span warehouse. City Docks originally had 14 of these

smaller storage warehouses for bagged rice cargo, constructed in the 1950s, each at 25,000 square feet. The warehouses were heavily utilized, however as cargo requirements changed the smaller old fashion warehouses became more of a challenge. Following the severe damage caused by Hurricane Laura, the scope was increased to include the replacement of seven warehouses to create one large 176,000 square feet, free-span warehouse. The project will include a new covered rail loading dock along the full length of the warehouse and two multi-truck loading areas. An increased floor load capacity is designed for today's larger cargo and handling equipment, and the new clear-span warehouse will allow for higher and more efficient storage. Additional improvements include a modern fire protection system, LED lighting, security system, restrooms, office space, additional roadway pavement, and an underground drainage system.

Figure 13: POLC – The Existing Warehouses with Proposed Replacement Overlay.

The new structure will allow for more efficient operations and a continued long-term relationship with a tenant who will be the main occupant of the new building. The project will allow the District to retain revenue while continuing to provide jobs for the District and Port stakeholders.

Funding

In 2018 the original project scope had a construction cost estimate of approximately $10 million, at that time a DOTD Port Priority grant application[10] was submitted and approved in the amount of $6 million. Following Hurricane Laura and the decision to increase the scope of the project from replacing four warehouses to seven, the estimated cost of construction increased from $10 million to $21 million. However, due to the damage being the result of Hurricane Laura, FEMA Public Assistance funding was available for the project. At the recommendation of the Grants Management consultant, each existing warehouse was evaluated, and a repair estimate was created for FEMA submittal, the Damage Inventory (DI) submittal combined all seven warehouses into one "428 Alternate" project. The 428 Alternate projects allowed the Port to utilize the funding for other projects instead of being held to repairing or replacing in kind. This allowed the Port to create a new recipient project, in this case, the new larger modern structure, to utilize FEMA funding. Additionally, the Port was able to utilize other FEMA 428 projects to fund the new warehouse recipient project. The project will be funded by numerous FEMA 428 projects in the amount of $24,458,657, and $6 million from the Port Priority Grant, with the remaining $600,000 matching funds being covered by the Port.

[10] This project was included in the 2018 Louisiana Port Construction & Development Priority Program Grant Application – Port of Lake Charles

Design & Integration with Aging Infrastructure

The project was undertaken utilizing the standard design-bid-build approach. Soon after the hurricane damage assessments were complete the need for covered storage was clear and the decision to move forward with the project was made. The design began in December 2020, while simultaneously a Port wide strategic plan[11] was nearing completion and confirmed the need for new warehouse space. During the design process, the geotechnical study identified poor soils necessitating larger foundations than originally expected, requiring deep foundations and thus greatly increasing cost. Additionally, existing conditions created numerous concerns during the design and bid process. All buildings were inspected for asbestos and lead-based paint; fortunately, all were clear. Also, a previous adjacent rail project uncovered contaminated soils from a long-removed liquid loading operation. Building new deep foundations adjacent to this area necessitated the bid package including a unit price for excavation and proper disposal of any found material. Further complicating the design and construction, adjacent operations including the railroad must stay in operation. This required special planning by the Contractor to accommodate their deliveries, staging, and manning of the project to accommodate operations and other ongoing construction projects.

[11] The most recent Port of Lake Charles strategic plan was presented by Martin Associates in June 2021.

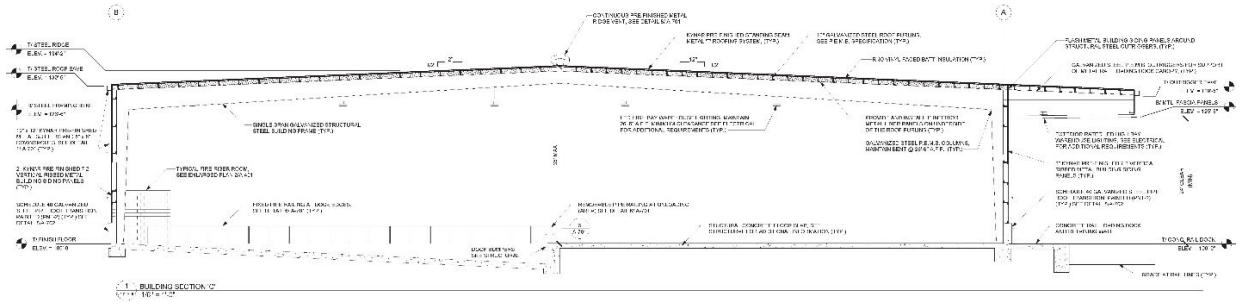

Figure 14: POLC – Proposed Clear Span Warehouse.

Contract & Construction

Following completion of the design, the project was put out for bid in March 2023 with an Engineer's Construction Estimate of $34.7 million. The low bidder was awarded the contract in the amount of $31,058,657 in April 2023.

The project is currently under construction with demolition complete and test piles installed. No contaminated soils were found and no major construction issues have occurred, the project is currently on schedule.

Figure 15: POLC – Demolition of Hurricane Damaged Warehouses in Progress.

OTHER PORT EXAMPLE PROJECTS

The Port of Caddo Bossier[12]

Background & Project Evaluation

The Port of Caddo Bossier project involved the rehabilitation of a dock facility built in the early 1990s, primarily used for handling steel coils and scrap steel. Over time, the pavement severely deteriorated due to operational wear and tear, requiring the need to improve the deck surface. The existing dock was supported by precast concrete piles, with a unique deck section that consists of a full slab pile cap, sand layer, rock, and concrete deck working surface. The project's goal was to replace the heavily worn concrete deck surface while also making improvements through lessons learned from years of use. The final product would improve on the original design creating a better structure for handling cargo. The estimated cost of the project was $500,000.

The decision to move forward was driven by the need to restore the existing pavement to good condition for continued operations as well as modernize the dock facility to handle heavier cargo and enhance overall operations.

Funding

Funding for the project came from local sources, demonstrating the Port's commitment to improving its infrastructure to meet operational demands.

[12] Information on this project was provided by Tyler Comeaux, P.E., the Director of Operations at the Port of Caddo Bossier.

Design & Integration with Aging Infrastructure

The project presented several design challenges, particularly concerning the main truck bay, which was large enough to accommodate three trucks side-by-side and considered the most efficient on-site and therefore the most utilized. As a result, the design and phasing were done to expedite the construction and reduce the impacts on the main truck bay as much as possible. The project team chose to utilize enlarged concrete deck sections to eliminate joints, resulting in a smoother surface and reduced potential for damage from cargo handling equipment.

Contract & Construction

Contract challenges were minimal, indicating efficient collaboration and communication between the Port, Engineers, and Contractors during the project's planning and execution.

During the construction phase, the team encountered unexpected obstacles, such as thicker concrete and remnants of scrap steel within the unique deck section. This led to a change order for both additional time and money due to the additional work; however, this was not the fault of the Contractor and was minimal in the overall project scope.

The Port of Caddo Bossier project is a great example of how a Port's efforts to maintain and modernize an existing dock facility is sometimes the best option. This project enhanced the structural capacity for heavier use and improved operations while preserving the adjacent dock structure and warehouse. By addressing design, funding, and construction challenges, the Port successfully improved the aging infrastructure into a more efficient and robust facility to meet the demands of modern cargo handling operations.

The Port of Tampa Bay[13]

Background & Project Evaluation

The Berth 268 project at the Port of Tampa Bay emerged as a critical need in response to the exponential failure of the almost 100-year-old wharf. Located in an area of the Port known as "Channelside", the facility was previously used for importing produce and required modernization to accommodate larger cruise ships that now call on the facility. The original structure, constructed in 1929, had been repaired over time but had now exceeded its useful life.

Funding

The urgency of the situation led to the project being initiated without grant funds, as the deterioration of the wharf posed a risk to cruise vessels' mooring. Moving forward with the project solely utilizing Port Capital Funds demonstrated the Port's commitment to maintaining and enhancing its infrastructure; however, fortunately, during the design and permitting phase, a State Grant was secured to support the project's execution.

Design & Integration with Aging Infrastructure

The project faced several design challenges, particularly due to the limited number of cruise terminals at the port. Shutting down a terminal during construction was not feasible. To address this, the project was split into two phases. Phase 1 focused on the demolition of the existing wharf and ordering the new sheet pile, while Phase 2 encompassed the actual construction of the wharf. During the construction process, finding a solution to get mooring lines

[13] Information on this project was provided by Patrick Blair, P.E., the Vice President of Engineering at The Port of Tampa Bay.

to critical mooring bollards proved to be another design challenge due to areas of the facility being demolished for the installation of the bulkhead and tie rods.

Contract & Construction

Contract challenges did not arise during the project, indicating effective collaboration and communication between the Port and Contractors.

However, construction challenges were significant. The wharf's age brought unexpected debris, including abandoned underground wooden walls and buried deep foundations from past buildings, making excavation and construction more complex. Moreover, Hurricane Ian's impact during Phase 1 caused portions of the existing structure to shift, necessitating the installation of a new temporary stabilization structure to maintain the soil and proceed with the demolition. These challenges led to a substantial change order, nearly exhausting the project's contingency. As a result, every issue on the project is now meticulously reviewed to carefully manage resources and costs moving forward.

Despite the challenges faced, the Berth 268 project remains a critical endeavor for the Port of Tampa Bay, ensuring the safe and efficient docking of modern cruise ships while preserving the Port's historical significance. By overcoming design, funding, and construction hurdles, the Port is making significant strides in modernizing its infrastructure to meet current and future demands.

CONCLUSION

The evaluation process for projects that blend new development with aging infrastructure involves a complete assessment of various factors to ensure informed decision-making. By assessing physical conditions, operation efficiency, and capacity requirements, ports can make informed decisions that align with long-term goals, ensuring continued operations, resilience, and sustainability.

Including a project in a port's master plan requires that the project's objectives be clearly defined, and determining if the project is aligned with a port's goals and vision. Evaluating project feasibility, obtaining stakeholder input, and prioritizing projects are critical steps to determine whether a project should be part of the overall master plan. Transitioning from the master plan to the Capital Improvement Program involves further short-term assessment, alignment with a port's current strategic goals, and consideration of annual or bi-annual financial impacts and cash flow.

To address the financial challenges associated with projects, ports can utilize their revenue sources as well as seek funding from state and federal grants, bonding capacity, taxes, and public-private partnerships. With careful planning and prioritizing of projects, ports can align with their long-term goals and secure funding to meet their needs.

The examples included in this paper offer insights into how ports manage the complications of new development while considering and possibly modernizing, aging infrastructure. These example projects are not meant to be perfect examples but are real-life projects that show various ways in which a project is initiated, funded, and constructed while contending with the challenges of aging infrastructure and maintaining adjacent operations.

These experiences and lessons learned are meant to contribute to the development of project planning and support ports in making informed decisions for their future development and growth.

By considering all factors and learning from past experiences, ports can address financial challenges, optimize project planning, and tackle the challenge of blending new development with aging infrastructure. The evaluation process, strategic master planning, and capital improvement programs ensure that ports remain resilient, adaptive, and future-ready in the ever-changing maritime industry.

REFLECTIONS ON LEARNING

Preparing this paper has brought to light that people outside of the maritime industry typically think of ports as a scene from a Hollywood movie with containers stacked everywhere and shiny cranes on large concrete berths, but in reality, most ports have been around for centuries and are utilizing a mix of modern and aging infrastructure to facilitate the movement of a variety of cargo in all shapes and sizes. As this paper was developed to provide guidance on blending the old and new, we quickly realized that it's more typical for ports to develop in brownfield sites and not greenfield. After many years of experience managing, designing, and building projects in and around older infrastructure, the criteria contained within this paper were already in practice at the authors' ports and other similar ports without recognizing it. We've learned that when ports take a step back to evaluate their own experiences in development, master planning, and capital projects, organizing the lessons they've learned can be a beneficial exercise to formulate a process for future success.

Granted, as is the case with many topics, this paper could have gone into further detail on numerous items; however, the size and scope of this paper would have grown exponentially. For example, this paper does not focus on the various governance models of ports due to their extensive variability from port to port. Even further still, this paper does not dive deep into the complicated application processes and tracking of grant-funded projects. Nevertheless, this paper does provide the content and criteria for any level of administration to work through selecting a project. Port governance, and its effect on the project selection process, would be a great topic for a future PPM paper.

This paper has brought to light that there will always be a need to replace or expand infrastructure within ports, and as such there will always be the challenge of blending new development with old.

SOURCE MATERIAL

The sections on “Factors to Consider”, “Master Planning”, and “Capital Improvement Programs”, including the figures and definitions therein, were developed by the authors and are based on past experiences and lessons learned from their over 40 years of combined engineering, project management, and maritime experience.

- 2018 Port of Beaumont Main Street Terminal 1 EDA Disaster Supplemental Grant Application
- 2019 Port of Beaumont Multimodal Corridor Expansion & Improvement Project BUILD Grant Application
- Port of Beaumont Master Plans
- Strategic Master Development Plan Port of Lake Charles – Martin Associates, June 2021
- 2022 PIDP Grant Application Port of Lake Charles Berth 4, 5, & 6 Wharf & Shed Reconstruction Project
- 2021 Port of Lake Charles Louisiana Port Construction & Development Priority Program Grant Application
- 2018 Port of Lake Charles Louisiana Port Construction & Development Priority Program Grant Application
- Virtual interview with Tyler Comeaux, P.E., Director of Operations, Port of Caddo Bossier
- Virtual interview/questionnaire with Patrick Blair, P.E., Vice President of Engineering, Port of Tampa Bay
- Interview with Port of Lake Charles, Executive Director, Richert Self
- Interview with Port of Beaumont, Director & CEO, David Fisher
- Interview with Port of Beaumont, Director of Corporate Affairs, Sade Chick
- Port of Beaumont Capital Improvement Programs
- Port of Lake Charles Capital Improvement Programs
- Others