Application for the Maritime Administration's Port Infrastructure Development Program (PIDP)
Under the Infrastructure Investment and Jobs Act ("Bipartisan Infrastructure Law")

Matagorda County Navigation District #1 dba the Port of Palacios
Energy & Resilience Improvement Project (ERIP)
Matagorda County, Texas

May 16, 2022

PROJECT NARRATIVE

Introductory Information	
Requested Data	**Response**
Name of applicant	Matagorda County Navigation District #1 dba Port of Palacios
Is the applicant applying as a lead applicant with any private entity partners or joint applicants?	No
What is the project name?	Port of Palacios Energy & Resilience Improvement Project (ERIP)
Project description	The project involves the rehabilitation of Turning Basins 1 and 2 that consists of 5,600 feet of bulkhead and includes the installation of 20 vessel to shore power stations with multiple outlets to serve several vessels at once.
Is this a planning project?	No
Is this a project at a coastal, Great Lakes, or inland river port?	Coastal
GIS Coordinates (in Latitude and Longitude format)	28° 41' 58.75" N; 96° 13' 36.98" W
Is this project in an urban or rural area?	Rural
Project Zip Code	77465
Is the project located in a Historically Disadvantaged Community or a Community Development Zone? (A CDZ is a Choice Neighborhood, Empowerment Zone, Opportunity Zone, or Promise Zone.)	Yes – Opportunity Zone
Has the same project been previously submitted for PIDP funding?	No
Is the applicant applying for other discretionary grant programs in 2022 for the same work or related scopes of work?	No
Has the applicant previously received TIGER, BUILD, RAISE, FASTLANE, INFRA or PIDP funding?	No
PIDP Grant Amount Requested	$9,600,000
Total Future Eligible Project costs	$12,000,000

Requested Data	Response
Total Project Cost	$12,000,000
Total Federal Funding	$9,600,000
Total Non-Federal Funding	$2,400,000
Will RRIF or TIFIA funds be used as part of the project financing?	No

Table of Contents

I. Project Description

Applicant Profile: The Matagorda County Navigation District #1 (MCND1) is a special district formed in 1940 and authorized by the Texas Legislature to promote commercial and recreational fishing, maintain a navigable waterway and to protect the coastal environment. It is commonly referred to as the Port of Palacios. MCND1 is a shallow-draft port that was initially created to provide a safe harbor for the boats that use the channel which was constructed by the U.S. Army Corps of Engineers across Matagorda Bay, from the Intracoastal Canal to Palacios. The original mission remains a vital part of the MCND1's existence over 80 years later.

Current Challenges: The Port of Palacios is home to several commercial fishing vessels, landside seafood operations and a small shipyard. The current challenge is that shore power, if any, is only provided by a few of the port operators. It is often sporadic and randomly used through extension cords. Additionally, the ideal location for new, permanent, and reliable shore power is plagued with bulkheads and berthing areas that were designed in the 1940s. New modern commercial fishing vessels, tugs and barges cannot safely use the facilities to berth and therefore do not have access to shore power.

Proposed Solution: In order to address the challenges, the Port of Palacios is proposing to rehabilitate the bulkhead and berthing areas of Turning Basins 1 and 2. The rehab will include a design standard upgrade that will make the facilities resilient to the effects of sea level rise, natural disasters, and inclement weather. Furthermore, the improved facilities will improve the safety, reliability, and efficiency for port operations. These improvements will also create economic opportunities in the region by adding capacity to the Port.

In order to fully capitalize on the improvements, 20 shore power units will be installed as part of the berth rehabilitation. The shore power will provide reliable and consistent power to all landside vessels in Turning Basins 1 and 2 thus mitigating harmful greenhouse gas emissions and creating a more sustainable operational environment in the Port of Palacios.

The official Project title is the "Port of Palacios' Energy & Resilience Improvement Project (ERIP)". The Project involves the rehabilitation of Turning Basins 1 and 2 that consists of 5,600 feet of bulkhead and includes the installation of 20 vessel to shore power stations with multiple outlets to serve several vessels at once. The ERIP was developed from a Waterfront Inspection Report completed in April of 2022 (Attachment No. 3). That study documented the needed structural improvements required to match the structural capacity demands of today's vessel and provided a preliminary design basis to move forward with full design. At this stage, the ERIP is ready to move into full design.

II. Project Location

The ERIP are located at the Port of Palacios in Matagorda County, Texas. The Port's physical address is *1602 Main Street, Palacios, Texas 77465,* and the GPS coordinates for the Project site are: 28° 41' 58.75" N; 96° 13' 36.98" W. ERIP is a small project (<$11.25M Federal request) at a small port seeking funding under 46 U.S.C. 54301(b) and is classified as rural. The project is located in a

Historically Disadvantaged Community and in Opportunity Zone 48321730600[1]. In addition to these designations, census tract 7306 which is home to the Project has the following disadvantage indicators as well:[2]

- Transportation Disadvantage
- Health Disadvantage
- Economy Disadvantage
- Equity Disadvantage
- Resilience Disadvantage

[1] Opportunity Zones - Map | opportunityzones.hud.gov
[2] Transportation Disadvantaged Census Tracts (arcgis.com)

III. Grant Funds, Sources, and Uses of Project Funds

Project Budget: The ERIP is estimated to cost $12M based on the cost estimates provided in the April 2022 Waterfront Inspection Report. The funding for the project will include $9.6M in Port Infrastructure Development Program (PIDP) funds and $2.4M in non-Federal funds. A funding letter commitment from the Port of Palacios can be found in Attachment No. 5. In that letter, the Port requests consideration for Federal participation to exceed 80%. A breakdown of the costs and funding plan, along with the percentage contribution for each funding source, are detailed in the following table.

Port of Palacios – Energy & Resilience Improvement Project Funding Schedule			
	Estimated Cost	**MCND1 Funding**	**PIDP Grant Funding**
Engineering/Design	$1,080,000	$216,000	$864,000
Shore Power Construction	$500,000	$100,000	$400,000
Turning Basin 1 Rehabilitation	$4,500,000	$900,000	$3,600,000
Turning Basin 2 Rehabilitation	$5,690,000	$1,138,000	$4,552,000
Nationwide Corps Permit	$30,000	$6,000	$24,000
Grant Administration	$200,000	$40,000	$160,000
Total	**$12,000,000**	**$2,400,000**	**$9,600,000**
Percentage of Total Contribution		**20%**	**80%**

Project Eligibility: The ERIP project is a small project at a small port. According to the U.S. Army Corps of Engineers data, the average annual cargo discharged through the MCND1 over the last five years has been 18,740 tons. The last three years total zero tons. The table below illustrates the discharged cargo per year.

Annual MCND1 Cargo Tonnage			
	2018	**2019**	**2020**
All Commodities	0	0	0

Source: U.S. Army Corps of Engineers Waterborne Commerce Statistics Center – Channel to Palacios[3]

In addition to being defined as a small port, the $9.6M funding request designates the ERIP as a "Small Project at a Small Port."

IV. Merit Criteria

A. Achieving Safety, Efficiency, or Reliability Improvements

The Energy & Resilience Improvement Project addresses safety, efficiency, and the reliability of port operations at the Port of Palacios.

Safety – Each project component addresses safety. The largest component which is the rehabilitation of Turning Basins 1 and 2 provides safe harbor for vessels. As safe harbor was one of the primary missions for the creation of the Port, this component will provide a reliable and safe home for vessels to berth during hazardous and non-hazardous conditions with the assurance that the berth is designed to the latest standards addressing sea level rise, code updates such as wind speed and storm surge. The safety and resilience incorporated into the Project will allow the Texas Department of Transportation ferries to continue utilizing the Port for safe harbor and shipyard repairs.

The second component, shore power, will address safety in two ways. First, the shore power component to be incorporated into the Turning Basin rehabilitation which will create a safe workplace for several commercial fishermen and the small shipyard at the Port by reducing greenhouse gas emissions. In addition to providing a level of environmental safety to the Port complex it will enhance the safety in the community by combating the Health Disadvantage Indicator for the area by reducing hazardous emissions. Second, with shore power, the dangerous operations of fueling over water area are reduced. Rather than fueling auxiliary generators while at dock, vessels can simply "plug-in" and eliminate an operation that poses an environmental threat to the waterways.

Efficiency – By having resilient berthing areas built to the latest design standard and available shore power, port operations become efficient. They become efficient by reducing trips inside the harbor. Currently, vessels are faced with offloading their catch at the most convenient or strongest dock space and then moving to an alternative location in the harbor that may not likely have shore power. With the ERIP, vessels can dock at one location, plug-in, and offload their catch until the next trip offshore.

Reliability – One definition of reliable is "consistently good in quality or performance; able to be trusted". The ERIP project makes the Port of Palacios' Turning Basins 1 and 2 reliable. They will be reliable to commercial fishing vessels because they will know that the docks are built for their daily operations and safe harbor. The Project also provides reliable shore power.

[3] WCSC - U.S. Army Corps of Engineers

Each of these improvements affect the movement of goods, specifically, seafood. With over 7 million tons landed in 2012 at the Port of Palacios these improvements are critical in getting the seafood to market. When operational improvements are put in place through construction projects such as ERIP, layers of safety, efficiency and reliability are created to sustain the next generation of fishing vessels, fishing families and fishing communities.

B. Supporting Economic Vitality at the National and Regional Level

Although the ERIP is a small project at a small port and does not require a benefit cost analysis (BCA), MCND1 chose to quantify benefits through the BCA protocols for Federally funded projects. The project segment for shore power was segregated from the overall Project. Those benefits for shore power included reduced emissions and savings from fuel and are calculated below. The shore power segment of the ERIP yields a BCA of 2.28. (BCA is provided in Attachment No.2).

Shore Power	
Capital Costs	**Present Value**
Shore Power Cost	$500,000
Total Cost	**$500,000**
Benefits	
Reductions related to Emissions	
Emissions Benefits (CO2)	$27,605
Emissions Benefits (All Other)	$870,487
Total from reduced in Emissions	**$898,092**
Reductions related to Fuel Savings	
Fuel Benefits	**$241,911**
Total Benefits	**$1,140,003**

Shore Power Summary	
Benefit Cost Ratio	**2.28**
Net Present Value	**$640,003**

Due to the complexity of work for the Turning Basin rehabilitation, the cost is very high in comparison to the shore power; therefore, a BCA greater than one was not obtainable. Nonetheless a benefit was derived through the reduced maintenance cost over time which yields a benefit of $1.4M.

Overall, the ERIP will provide an economic advantage that does not exist in the Matagorda region or across port complexes. That differentiator is up-to-date berth design with shore power. Vessels looking for safe harbor or a small shipyard with shore power will have a new option on the Gulf Coast. This advantage is evidenced in the letter of support by Southern Devall found in Attachment No. 4. New and different vessels mean new revenue for the port and port tenants which mitigates the Economic Disadvantage Indicator for this region.

C. Addressing Climate Change and Environmental Justice Impacts

The results of DOT's Disadvantaged Census Tract Tool will be directly addressed by the ERIP. The table below shows the local disadvantages and how the ERIP will offset that disadvantage.

Disadvantage	ERIP Offset
Transportation	*Local and state funds are limited and have not historically been invested to an adequate level in Port infrastructure. Likewise, Federal participation has been historically minimal. A PIDP award for ERIP will reverse that imbalance.*
Health	*Shore Power will reduce harmful GHG emissions in the Port and community.*
Economy	*As evidenced in the Southern Devall letter of support, the Project creates an opportunity for new economic ventures yielding revenue and jobs in the local community.*
Equity	*Palacios is 66% Hispanic and 9% Asian. These minorities are the majority of commercial fisherman and fish-house owners.*[4] *The Project removes barriers and provides stability, opportunity, and sustainability for minority-owned enterprises.*
Resilience	*As a coastal port subject to sea level rise, coastal flooding and limited access to shore power, the Project will address each of these.*

D. Advancing Equity and Opportunity for All

The ERIP creates several opportunities to strategically advance equity and promote workforce opportunities despite the multiple layers of disadvantages in the community. In addition to the disadvantages noted in the DOT Disadvantaged Census Tract Tool, Matagorda County is challenged with income levels. 2020 Census QuickFacts reports that the median household income is $48,733

[4] Palacios, TX - Profile data - Census Reporter

compared to the U.S. median of $64,994. This disparity is endured by the 3,351 firms in the County of which almost 50% are minority-owned.[5]

One strategy is setting Disadvantaged Business Enterprise (DBE) goals for the construction project. With $10.6M proposed for construction, ERIP will provide opportunities directly as prime contractors and indirectly as subcontractors. The Port of Palacios will hold a pre-bid meeting and provide the outreach necessary to alert the DBE firms about the opportunity and goals for participation.

A second and longer-term strategy is to partner with Wharton County Junior College and work to provide apprenticeship opportunities in electrical repair which will be needed for the new shore power stations as well as small shipyard repair. With the increased structural capacity, it is envisioned that the shipyard will serve a more diverse fleet of vessels and require new skills in the shipyard market. That skills gap will be filled with the apprenticeship program in partnership with the Port of Palacios, Palacios Shipyard and Wharton County Junior College.

Both of these programs will benefit the Hispanic (66%) and Asian (9%) populations that have limited opportunities in Palacios and Matagorda County.

E. Leveraging Federal Funding to Attract Non-Federal Sources of Infrastructure Investment

The proposed Federal investment for the ERIP is expected to attract non-Federal investment at the Port of Palacios. First, the improvements at the Port are expected to parlay improvements by Palacios Shipyard. As the ERIP brings a diverse fleet of vessels to service, Palacios Shipyard will invest in more employees, equipment and expanded services. Likewise, the ability to harbor shallow water tugs will generate new economic activity in the Port complex which will yield investments that will be determined by the scope of activity. The shore power component of the ERIP will prompt the local electric provider, AEP, to invest in the local electric grid. Lastly, the Port of Palacios will be entering into a Memorandum of Understanding (MOU) with HIF Global. They will be constructing an eFuels facility representing a capital investment of $6B and 125 permanent jobs.[6] The actual scope of services that ERIP will provide for HIF Global will be determined in the next several months as the MOU is negotiated, but it is clear that the Port and the Federal investment through ERIP will leverage the HIF Global investment.

[5] U.S. Census Bureau QuickFacts: United States

[6] HIF Global Selects Matagorda County, Texas for eFuels Facility | Energy Analytics Institute (EAI) (energy-analytics-institute.org)

V. Project Readiness

A. Technical Capacity

Experience - The MCND1 as a special government district is experienced with grants funds and working with Federal agencies. On a regular basis, MCND1 interacts with FEMA Homeland Security (Port Security Grant), U.S. Army Corps of Engineers, and the U.S. Coast Guard. In order to ensure grant compliance, the MCND1 is positioned to contract with a grants management firm to provide grant administration and compliance. The cost for this administrative contract is included in the project budget. Outside of grants management, the Port of Palacios has an annual capital improvement program that involves maritime projects. As these projects are developed with the assistance of regional engineering firms who specialize in port infrastructure all aspects of project development are executed including design development, advertisement, bidding, contracting, construction, and construction administration.

With years of experience coordinating with both State and Federal funding agencies and a track-record of successful project implementation, the MCND1 is familiar with the compliance needs and requirements to initiate, manage, and close out awarded grants.

Schedule: The ERIP will be constructed via a design, bid, build project delivery method. The design initiative will start upon grant award; however, with a design basis already scoped through the waterfront inspection report, the initial phase of design will move quickly into 30% plans. Actual construction work is expected to last 9 months. The overall effort will be completed before the required obligation and expenditure dates. The table below provides an estimated timeline of events related to the Project and shows a little over a year of contingency.

Activity	Duration	Start	Finish
PIDP Grant Awards (estimated)			September, 2022
Kickoff with USDOT			October, 2022
Engineering Design Work	6 months	October, 2022	April, 2023
USACE Nationwide Permit	6 months	October, 2022	April, 2023
Bid Package for Procurement	1 months	April, 2023	May, 2023
Advertise for Bids/Contract	2 months	May, 2023	July, 2023

Award			
Construction	9 months	July, 2023	April, 2024
PIDP Grant Funds Obligation Deadline			September 30, 2025
PIDP Grant Funds Expended Deadline			September 30, 2030

B. Environmental Risk

NEPA Status and Permitting: The project site is located within the Port of Palacios footprint of existing infrastructure. A NEPA checklist was documented as Attachment No. 6 and the ERIP qualifies as a categorical exclusion. The only permitting that will be necessary is a U.S. Army Corps of Engineers Nationwide Permit. That is expected to take 6 months and is accounted for in the schedule above.

No other significant environmental concerns or impacts were recorded for the proposed project. Therefore, no environmental risks are anticipated.

C. Risk Mitigation

Because of the categorical exclusion, float in the schedule and simplicity of the Project, no significant risks are expected. Two potential risks are identified below with potential mitigants:

Higher Construction Costs: The MCND1 will work closely with the project engineering team to ensure cost estimates are reflective of market conditions. Also, in the unlikely event costs are higher than the programmed estimates, the MCND1 will evaluate the difference in costs and decide whether or not to program additional funding or explore cost-cutting alternatives.

Disaster Related Delays: Located along the Gulf Coast, the MCND1 is very familiar with the potential delays associated with hurricanes and other unforeseen natural disasters. There is no primary mitigation plan, but the schedule has over a year of float before grant deadlines are encountered to address any delays.

VI. Domestic Preference

MCND1 believes that the ERIP can be constructed with materials and products domestically sourced. During the design process, the MCND1 will work with their engineers to ensure that product specifics, such as domestic sourcing, are detailed. Additionally, MCND1 will host a mandatory pre-bid meeting for all contractors. As part of the agenda, product availability and

sourcing will be discussed, and any amendments may need to be issued in a bid package to remain compliant with Buy American provisions. No waiver or exception is anticipated for this project.

VII. Determinations

Project Determination	Response
1. The project improves the safety, efficiency, or reliability of the movement of goods through a port or intermodal connection to the port.	The ERIP constructs shore power and improved docks which will provide safe harbor, reduce emissions, efficient mooring operations, reliable infrastructure, and increased capacity at the Port of Palacios. Reference Section IV.A.
2. The project is cost effective.	The shore power component of ERIP has a BC ratio of 2.28. The overall project has quantified benefits over $2.5M. Reference BCA attachment.
3. The eligible applicant has the authority to carry out the project.	Matagorda County Navigation District No. 1 is a Special District formed in 1940 and authorized by the Texas Legislature and governed by a 5-member Port Commission.
4. The eligible applicant has sufficient funding available to meet the matching requirements.	The Port of Palacios as an eligible applicant with a small project in a rural area, requests the Federal share to be increased above 80%. If the request detracts from the competitiveness of this application, the Port is fully committed to funding the required match which is reiterated with a funding commitment letter attached to the application.
5. The project will be completed without unreasonable delay.	The Project can be completed within reason. Reference Project Schedule in Section V.A.
6. The project cannot be easily and efficiently completed without Federal funding or financial assistance available to the project sponsor.	This Project if funded completely by MCND1 would take several years to construct. Federal assistance is necessary.

VIII. Attachments

1. Project Narrative
2. Benefit Cost Analysis
3. Waterfront Inspection Report
4. Letters of Support
5. Funds Commitment Letter
6. NEPA Checklist
7. Texas Department of Transportation Letter of Support

Port of Palacios MARAD PIDP Grant

Shore Power

Capital Costs	**Present Value**
Shore Power Cost	$500,000
Total Cost	**$500,000**

Benefits	
Reductions related to Emissions	
Emissions Benefits (CO2)	$27,605
Emissions Benefits (All Other)	$870,487
Total from reduced in Emissions	**$898,092**
Reductions related to Fuel Savings	
Fuel Benefits	**$241,911**
Total Benefits	**$1,140,003**

Shore Power Summary	
Benefit Cost Ratio	2.28
Net Present Value	$640,003

Total Project

Capital Costs	**Present Value**
Total Project Cost	$12,000,000
Total Cost	**$12,000,000**

Benefits	
Reduction related to Emissions	
Emissions Benefits (CO2)	$27,605
Emissions Benefits (All Other)	$870,487
Total from reduced in Emissions	$898,092
Reduction related to Fuel Saving	
Fuel Benefits	$241,911
Reduction related to Maintenance	
Maintenance Benefits	$1,408,072
Total Benefits	**$2,548,075**

Total Project Summary	
Benefit Cost Ratio	0.21
Net Present Value	-$9,451,925

Emissions Benefits																					
Emissions Reduction (annual metric tons saved)	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043
NOx	-	-	2.8900	2.8900	2.8900	2.8900	2.8900	2.8900	2.8900	2.8900	2.8900	2.8900	2.8900	2.8900	2.8900	2.8900	2.8900	2.8900	2.8900	2.8900	2.8900	2.8900
SOx	-	-	0.0800	0.0800	0.0800	0.0800	0.0800	0.0800	0.0800	0.0800	0.0800	0.0800	0.0800	0.0800	0.0800	0.0800	0.0800	0.0800	0.0800	0.0800	0.0800	0.0800
CO_2	-	-	29.8500	29.8500	29.8500	29.8500	29.8500	29.8500	29.8500	29.8500	29.8500	29.8500	29.8500	29.8500	29.8500	29.8500	29.8500	29.8500	29.8500	29.8500	29.8500	29.8500
PM2.5	-	-	0.0400	0.0400	0.0400	0.0400	0.0400	0.0400	0.0400	0.0400	0.0400	0.0400	0.0400	0.0400	0.0400	0.0400	0.0400	0.0400	0.0400	0.0400	0.0400	0.0400
Emissions Benefit (annual $ savings, undiscounted)	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043
NOx Benefit			$47,974	$48,552	$49,130	$49,997	$50,575	$51,153	$51,153	$52,020	$52,020	$52,020	$52,020	$52,020	$52,020	$52,020	$52,020	$52,020	$52,020	$52,020	$52,020	$52,020
SOx Benefit			$3,512	$3,592	$3,640	$3,696	$3,752	$3,808	$3,856	$3,856	$3,856	$3,856	$3,856	$3,856	$3,856	$3,856	$3,856	$3,856	$3,856	$3,856	$3,856	$3,856
CO_2 Benefit			**$1,642**	**$1,672**	**$1,701**	**$1,731**	**$1,761**	**$1,791**	**$1,821**	**$1,851**	**$1,881**	**$1,910**	**$1,970**	**$2,000**	**$2,030**	**$2,060**	**$2,090**	**$2,119**	**$2,149**	**$2,179**	**$2,239**	**$2,269**
PM2.5 Benefit			$31,308	$31,864	$32,300	$32,744	$33,192	$33,648	$34,108	$34,108	$34,108	$34,108	$34,108	$34,108	$34,108	$34,108	$34,108	$34,108	$34,108	$34,108	$34,108	$34,108
Total (Non-CO2) Benefit			**$82,794**	**$84,008**	**$85,070**	**$86,437**	**$87,519**	**$88,609**	**$89,117**	**$89,984**	**$89,984**	**$89,984**	**$89,984**	**$89,984**	**$89,984**	**$89,984**	**$89,984**	**$89,984**	**$89,984**	**$89,984**	**$89,984**	**$89,984**

Reduction in Mantaince																						
Year	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043
Maintaince Reduction	-	-	$ 30,000.00	$ 30,000.00	$ 30,000.00	$ 30,000.00	$ 30,000.00	$ 30,000.00	$ 30,000.00	$ 30,000.00	$ 30,000.00	$ 30,000.00	$ 30,000.00	$ 30,000.00	$ 30,000.00	$ 30,000.00	$ 30,000.00	$ 30,000.00	$ 30,000.00	$ 30,000.00	$ 30,000.00	$ 30,000.00

Fuel Savings																						
Fuel Savings	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043
Gallons of diesel per year	-	-	7707.60	7707.60	7707.60	7707.60	7707.60	7707.60	7707.60	7707.60	7707.60	7707.60	7707.60	7707.60	7707.60	7707.60	7707.60	7707.60	7707.60	7707.60	7707.60	7707.60
Cost per Gallon	-	-	$ 3.17	$ 3.17	$ 3.17	$ 3.17	$ 3.17	$ 3.17	$ 3.17	$ 3.17	$ 3.17	$ 3.17	$ 3.17	$ 3.17	$ 3.17	$ 3.17	$ 3.17	$ 3.17	$ 3.17	$ 3.17	$ 3.17	$ 3.17
Total Saving per Year	-	-	$ 24,433.09	$ 24,433.09	$ 24,433.09	$ 24,433.09	$ 24,433.09	$ 24,433.09	$ 24,433.09	$ 24,433.09	$ 24,433.09	$ 24,433.09	$ 24,433.09	$ 24,433.09	$ 24,433.09	$ 24,433.09	$ 24,433.09	$ 24,433.09	$ 24,433.09	$ 24,433.09	$ 24,433.09	$ 24,433.09

Discounted Summary Results ($2022)

Year		2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043
Year of Operation		-	-	-	-	-	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
Base Year Y for Discounting		0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
Discount Factor (7% Disc.)		1.000	1.070	1.145	1.225	1.311	1.403	1.501	1.606	1.718	1.838	1.967	2.105	2.252	2.410	2.579	2.759	2.952	3.159	3.380	3.617	3.870	4.141
Discount Factor(3% Disc.)		1.000	1.030	1.061	1.093	1.126	1.159	1.194	1.230	1.267	1.305	1.344	1.384	1.426	1.469	1.513	1.558	1.605	1.653	1.702	1.754	1.806	1.860

Discounted Costs	Present Value
Shore Power Cost	$500,000
Total Discounted Cost	**$500,000**

Discounted Benefits																							
Reductions related to Emissions																							
Emissions Benefits (CO2)	$27,605	-	-	$1,547.5	$1,529.8	$1,511.7	$1,493.4	$1,474.9	$1,456.2	$1,437.4	$1,418.4	$1,399.3	$1,380.1	$1,381.8	$1,361.9	$1,341.9	$1,322.0	$1,302.1	$1,282.2	$1,262.4	$1,242.7	$1,239.5	$1,219.5
Emissions Benefits (All Other)	$870,487	-	-	$72,315.5	$68,575.6	$64,899.5	$61,628.4	$58,317.6	$55,181.2	$51,866.9	$48,945.3	$45,743.3	$42,750.8	$39,954.0	$37,340.2	$34,897.3	$32,614.3	$30,480.7	$28,486.6	$26,623.0	$24,881.3	$23,253.6	$21,732.3
Total from reduced in Emissions	$898,092																						
Reductions related to fuel savings																							
Fuel Benefits	$241,911			$21,340.8	$19,944.7	$18,639.9	$17,420.5	$16,280.8	$15,215.7	$14,220.3	$13,290.0	$12,420.5	$11,608.0	$10,848.6	$10,138.9	$9,475.6	$8,855.7	$8,276.3	$7,734.9	$7,228.9	$6,756.0	$6,314.0	$5,900.9
Total Discounted Benefits	**$1,140,003**																						
Shore Power Summary																							
Benefit Cost Ratio	2.28																						
Net Present Value	$640,003																						

Total Project

Discounted Costs	Present Value
Total Project Cost	$9,000,000
Total Discounted Cost	**$9,000,000**

Discounted Benefits																							
Reduction in Maintenance Cost																							
Maintenance Benefits	$1,408,072			$34,347.0	$36,751.3	$39,323.9	$42,076.6	$45,021.9	$48,173.4	$51,545.6	$55,153.8	$59,014.5	$63,145.6	$67,565.7	$72,295.4	$77,356.0	$82,770.9	$88,564.9	$94,764.5	$101,398.0	$108,495.8	$116,090.5	$124,216.9
Total Discounted Benefits	**$2,548,075**																						

Total Project Summary	
Benefit Cost Ratio	0.28
Net Present Value	-$6,451,925

Look Up Table		Source
Discount Rate	0.07	USDOT 2021 BCA Guidance
Discount Rate (Carbon Emissions)	0.03	USDOT 2021 BCA Guidance
average cost of diesel fuel (2022$s, net of fuel taxes)	$ 3.17	
Grams to tons conversion	1000000	
Kilograms to metric tons conversion	0.001	
US tons to metric tons conversion	0.9072	

Emissions Kilograms Per kWh												
Vessel	Source	Unit	Vessel Type	2021	2022	2023	2024	2025	AVG pollutant decrease, 2021-2025	AVG annual % pollutant decrease, 2021-2025		
Oxides of Nitrogen (NOx)	Shore Power Tech Assessm	kg/kWh	Miscellaneous (Deasil)	0.169877	0.156836	0.146297	0.137602	0.130284	0.009898	6.419%	0.8	0.8
Sulfur Dioxide (SO2)	Shore Power Tech Assessm	kg/kWh	Miscellaneous (Deasil)	0.000217	0.000213	0.000209	0.000205	0.000200	0.000004	1.955%	0.9	0.9
CO2 Equivalent	Shore Power Tech Assessm	kg/kWh	Miscellaneous (Deasil)	64.371870	63.228151	62.165454	60.886592	59.703328	1.167135	1.865%	0.9	0.9
PM2.5	Shore Power Tech Assessm	kg/kWh	Miscellaneous (Deasil)	0.004023	0.003506	0.003125	0.002800	0.002533	0.000372	10.918%	0.6	0.6

Emissions Costs Per Ton	Source	Unit	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043
Nox	USDOT 2021 BCA Guidance	$/Metric Ton	$ 15,700.00	$ 15,900.00	$ 16,100.00	$ 16,400.00	$ 16,600.00	$ 16,800.00	$ 17,000.00	$ 17,300.00	$ 17,500.00	$ 17,700.00	$ 17,700.00	$ 18,000.00	$ 18,000.00	$ 18,000.00	$ 18,000.00	$ 18,000.00	$ 18,000.00	$ 18,000.00	$ 18,000.00	$ 18,000.00	$ 18,000.00	$ 18,000.00	$ 18,000.00	$ 18,000.00	$ 18,000.00
Sox	USDOT 2021 BCA Guidance	$/Metric Ton	$ 40,400.00	$ 41,300.00	$ 42,100.00	$ 43,000.00	$ 43,900.00	$ 44,900.00	$ 45,500.00	$ 46,200.00	$ 46,900.00	$ 47,600.00	$ 48,200.00	$ 48,200.00	$ 48,200.00	$ 48,200.00	$ 48,200.00	$ 48,200.00	$ 48,200.00	$ 48,200.00	$ 48,200.00	$ 48,200.00	$ 48,200.00	$ 48,200.00	$ 48,200.00	$ 48,200.00	$ 48,200.00
CO_2	USDOT 2021 BCA Guidance	$/Metric Ton	$ 50.00	$ 52.00	$ 53.00	$ 54.00	$ 55.00	$ 56.00	$ 57.00	$ 58.00	$ 59.00	$ 60.00	$ 61.00	$ 62.00	$ 63.00	$ 64.00	$ 66.00	$ 67.00	$ 68.00	$ 69.00	$ 70.00	$ 71.00	$ 72.00	$ 73.00	$ 75.00	$ 76.00
PM2.5	USDOT 2021 BCA Guidance	$/Metric Ton	$ 729,300.00	$ 742,300.00	$ 755,500.00	$ 769,000.00	$ 782,700.00	$ 796,600.00	$807,500.00	$818,600.00	$ 829,800.00	$841,200.00	$852,700.00	$852,700.00	$852,700.00	$852,700.00	$852,700.00	$852,700.00	$852,700.00	$852,700.00	$852,700.00	$852,700.00	$852,700.00	$852,700.00	$852,700.00	$852,700.00	$852,700.00

GDP Price Deflators
1.00745

Source:

USDOT 2021 BCA Guidance	https://www.transportation.gov/office-policy/transportation-policy/benefit-cost-analysis-guidance-discretionary-grant-programs-0
Shore Power Technology Assessment	https://www.epa.gov/sites/default/files/2017-05/documents/420r17004-2017-update.pdf#page=51
Shore Power Assessment Calcularot	https://www.epa.gov/ports-initiative/shore-power-technology-assessment-us-ports

Waterfront Facility Assessment

Port of Palacios, Texas

April 2022

STATE OF TEXAS
MICHAEL J. SCHNEIDER
112407
LICENSED
PROFESSIONAL ENGINEER

Michael J. Schneider

04/02/2022

Prepared for:

Port of Palacios
1602 Main Street
Palacios, TX 77465

Prepared by:

COLLINS ENGINEERS INC.

Texas Registered Firm No. 9791
501 Proctor Street Suite 324
Port Arthur, TX 77640
409-812-2223 • collinsengr.com

TABLE OF CONTENTS

EXECUTIVE SUMMARY

Collins Engineers, Inc. (Collins) was contracted by the Port of Palacios (Port) to perform an above and below water structural assessment of approximately 12,000 linear feet of bulkhead of various construction and age, five timber piers, and 2,200 ft. of articulated concrete mat (ACM). The purpose of the inspection was to establish a detailed structural condition for each facility based on waterfront engineering industry standards including American Society of Civil Engineers Manual of Practice 130. For the purposes of this study, the waterfront facilities were separated into five broad categories (refer to Figure ES-1).

- Steel Sheet Pile Bulkhead
- Timber Sheeting Bulkhead
- Concrete Sheeting Bulkhead
- Timber Piers
- Articulated Concrete Mat

Figure ES-1 – Overall Site Plan

Steel Sheet pile Bulkhead

The steel sheet pile bulkheads vary in age of construction, subsequently corresponding to their overall condition. Steel sheet pile constructed between 1983 to 1989 (1980s) are in overall **Poor Condition**. Typical defects above water include up to 100% coating loss with moderate pitting, and isolated locations of thru holes. At locations of heavy deterioration and section loss, there are failed sections of the tie back assembly that are no longer connected with the steel sheeting. Steel sheet pile bulkheads constructed between 2001 and 2012 (2000s) are in overall **Fair Condition**. Typical defects above water include up to 50% coating loss with light pitting. Below water, both 1980s and 2000s steel coatings are intact and are in good condition.

Timber Sheeting Bulkhead

The timber sheeting bulkheads at the marine railway are in overall **Severe Condition**. Typical defects include horizontal displacement, heavy deterioration, rot above and below water, and active sinkholes. The timber sheeting bulkhead west of Turning Basin 1 is in overall **Satisfactory Condition**, with minor checks and splits, and heavy corrosion in the steel fasteners.

Concrete Sheeting Bulkhead

The concrete sheeting bulkheads north of Turning Basin 1 are in overall **Severe Condition**, with spalls throughout and sinkholes with active fill loss. The concrete sheeting bulkheads near the main channel are in overall **Poor Condition**, with longitudinal cracking with rust staining, and delamination and spalls at the edges of the planks and caps.

Timber Piers

The timber piers are numbered Pier 1 through 5 from east to west. Pier 1 is in overall **Fair Condition**, with heavy deterioration to cross bracing hardware and associated components near low water, splits in the timber pile caps, and missing connection hardware and heavy deterioration to handrail and bracing on approximately 5% of the structure. Piers 2, 3, 5, and approximately 225 linear feet of the eastern portion of Pier 4 are in overall **Severe Condition**. These locations typically exhibit up to 90% section loss in pile cap connection hardware, with several sections having 100% section loss, where the pile cap is no longer effectively supporting sections of the deck. The remainder of Pier 4 is in overall **Fair Condition**, with moderate deterioration in connection hardware and minor splits and checks in timber members. During the time of inspection, approximately 275 linear feet of the western

portion of Pier 4 superstructure and deck components have been removed, the timber piles remain. There are two additional piers at the north end of Turning Basin #1 that are in **Severe Condition**.

Note regarding Piers in Severe Condition: failure of the pile cap hardware can lead to destabilization of the superstructure and poses an unsafe condition for occupants. Use restrictions are recommended until repairs can be completed.

Articulated Concrete Mat

The articulated concrete mat is in overall **Fair Condition**, with minor settlement and heaving primarily above water.

Recommendations, Prioritization, and Cost Estimates

The following list provides a summary of the recommendations, with the prioritization based on the condition of the structures:

- Immediate repair items (within 6 months): Discrete repair of Piers 2, 3, 4, and 5. These repairs consist of repairs to the hardware, substructure, superstructure, deck, handrails, and bracing.
- Short term repair items (within 2 years): Remove and replace the two piers in Turning Basin #1, adjacent to the marine railways.
- Medium term repairs items (within 5 years): Rehabilitation or replacement of the bulkhead from Sta. 3+34 to 16+60, 31+90 to 55+91, 62+85 to 70+00, 97+50 to 120+50.
- Long term repair items (within 10 years): Discrete repair of Pier 1, and rehabilitation of the concrete bulkhead cap from Sta. 24+79 to 31+90.
- Perpetual recommendations: In accordance with the MOP 130, it is recommended that structures in fair/poor condition in aggressive environments be inspected every four years. Significant storm events, such as hurricanes may warrant post-event inspections to identify if interim action may be necessary due to storm-related damage.

A simplified breakdown of the recommendations and cost estimates is provided in the following table. The detailed cost estimate is in Appendix C of this report. Additional information regarding the recommendations and anticipated remaining service life is contained within the body of this report. A low range estimate is provided assuming that the 1980s vintage steel sheet pile can be rehabilitated. The corresponding high estimate assumes that the 1980s sheeting will need to be replaced. Further investigations, such as test pits, soil borings, geotechnical analysis, and structural analysis of the

existing bulkhead is required to more accurately determine if rehabilitation is feasible. Estimates for the field investigations, engineering and planning associated with progressing the design development are provided within the detailed cost estimates in Appendix C.

Item	Priority[1]	Low Total	High Total
3+34 - 5+20, install new SSP bulkhead	3	$800,000	$800,000
5+20 - 7+04, protective concrete facing (low), new SSP bulkhead (high)	3	$400,000	$800,000
7+04 - 14+85, install new SSP bulkhead	3	$3,500,000	$3,500,000
14+85-16+60, protective concrete facing (low), new SSP bulkhead (high)	3	$400,000	$800,000
24+79 - 31+90, concrete cap rehabilitation	4	$300,000	$300,000
31+90 - 55+91, protective concrete facing (low), new SSP bulkhead (high)	3	$5,800,000	$10,800,000
62+85 - 70+00, protective concrete facing (low), new SSP bulkhead (high)	3	$1,700,000	$3,200,000
97+50 - 120+50, protective concrete facing (low), new SSP bulkhead (high)	3	$5,500,000	$10,400,000
Pier 1, discrete repair, hardware, sub/superstructure, deck, handrail, bracing	4	$200,000	$200,000
Pier 2, discrete repair, hardware, sub/superstructure, deck, handrail, bracing	1	$70,000	$70,000
Pier 3, discrete repair, hardware, sub/superstructure, deck, handrail, bracing	1	$70,000	$70,000
Pier 4, discrete repair, hardware, sub/superstructure, deck, handrail, bracing	1	$100,000	$100,000
Pier 5, discrete repair, hardware, sub/superstructure, deck, handrail, bracing	1	$90,000	$90,000
Remove and replace dilapidated pier at west side of marine railway, TB#1	2	$120,000	$120,000
Remove and replace pier at east side of marine railway, TB#1	2	$120,000	$120,000
		$19,300,000	**$31,400,000**

Notes: 1. 1 = Immediate (6 months); 2 = Short term (2 years); 3 = Medium term (5 years); 4 = Long term (10 years)

Table ES-1 – Recommendations and Cost Estimate Breakdown

1.0 General

The Port of Palacios is a waterfront facility located in Matagorda Bay, Palacios, TX, and is overseen by the Matagorda County Navigation District No. 1 (MCND 1). The mission of MCND 1 is to optimize use of its properties for both commercial and recreational purposes and maintain existing properties in a safe and cost-effective manner, stimulating economic development throughout the District's partnerships with public and private entities. The Port of Palacios consists of a main entry channel, five turning basins, over 12,000 linear feet of bulkhead that range in age and construction method, five timber piers, over 2,000 linear feet of articulated concrete mat (ACM), and a concrete boat launch. The front face of the bulkheads and timber piers typically have a timber fender system to support the docking of vessels. The main entry channel was originally dug in 1928. Turning Basins 1 and 2 were originally dug around the 1940s and included concrete bulkheads with associated docks and wharves. In 1982, westerly expansion included the excavation of Turning Basin 3 and installation of a steel sheet pile bulkhead. Turning Basin 4 was dug in 2008 and includes a steel sheet pile bulkhead to further accommodate for the commercial shrimp and oyster industry. Miscellaneous repairs of varying vintage have been performed throughout the site, largely consisting of concrete slab repairs, concrete pile cap repairs, fender system repairs.

1.1 Scope of Work

Collins Engineers, Inc. was tasked by the Port of Palacios (Port) to provide professional engineering services for the above and below water assessment of the Port facilities as follows:

- Review of existing inspection reports and design drawings
- Above water inspection
    - Lead line soundings at 50 ft intervals along the bulkhead face and referenced to the top of the concrete cap
    - Visual inspection of landside areas in the immediate vicinity of the bulkheads
    - Visual inspection of timber docks located in Turning Basin 1 and 3, and between the boat ramp and entry channel
    - Visual inspection of accessible and visible timber fender components

- Below water inspection
    - 100% level I inspection of over 2,000 linear feet of ACM
    - 100% level I inspection of approximately 9,800 linear feet of steel sheet pile (SSP) bulkhead
    - Level II inspection and level III ultrasonic thickness testing (UT) of approximately 9,800 linear feet of SSP bulkhead in accordance with the following schedule
        - SSP sections installed since Year 2000: 100 ft horizontal centers at waterline and mudline
        - SSP sections installed up to and including Year 1990: 50 ft horizontal centers at waterline, mid-depth, and mudline
    - 100% level I inspection of approximately 400 linear feet of timber sheeting bulkhead
    - 100% level I inspection of approximately 1,100 linear feet of concrete sheeting bulkhead

1.2 Method of Investigation

Inspection included investigation of the bulkhead, timber piers, and ACM. Inspection of the bulkhead included tactile and visual investigation of all structural elements of the sheeting, fender components, tie back components (extents visible), connection hardware, top of deck, and associated landside areas in the immediate vicinity. Inspection of the timber piers included a limited above water visual investigation for any significant defects and deficiencies which could impact serviceability and public safety. Limited visual investigation of the ACM was conducted to inspect for damage, movement, missing sections, and undermining.

Above water inspections were conducted by wading, kayak, and walking using a two-person team. All below water inspections were accomplished using surface supplied air diving equipment using a three-person team and in accordance with diving requirements of the current ADCI Consensus Standards and OSHA 1910 Subpart C. Various sections of bulkhead could not be accessed during both the above and below water inspections due to ongoing maintenance operations of moored vessels. The following table from the in the American Society of Civil Engineers Manual of Practice 130 (ASCE MOP 130)

"Waterfront Facilities Inspection and Assessment" provides descriptions of the condition ratings utilized for this inspection:

Table 2-14. Condition Assessment Ratings

Rating	Description
Good	No visible damage or only minor damage noted. Structural elements may show very minor deterioration, but no overstressing observed. No repairs are required.
Satisfactory	Limited minor to moderate defects or deterioration observed but no overstressing observed. No repairs are required.
Fair	All primary structural elements are sound but minor to moderate defects or deterioration observed. Localized areas of moderate to advanced deterioration may be present but do not significantly reduce the load-bearing capacity of the structure. Repairs are recommended, but the priority of the recommended repairs is low.
Poor	Advanced deterioration or overstressing observed on widespread portions of the structure but does not significantly reduce the load-bearing capacity of the structure. Repairs may need to be carried out with moderate urgency.
Serious /Severe	Advanced deterioration, overstressing, or breakage may have significantly affected the load-bearing capacity of primary structural components. Local failures are possible, and loading restrictions may be necessary. Repairs may need to be carried out on a high-priority basis with urgency.
Critical	Very advanced deterioration, overstressing, or breakage has resulted in localized failure(s) of primary structural components. More widespread failures are possible or likely to occur, and load restrictions should be implemented as necessary. Repairs may need to be carried out on a very high-priority basis with strong urgency.

Figure 1-1 – Condition Assessment Ratings from ASCE MOP 130

1.3 Notes on Recommendations, Cost Estimates and Service Life Approximations

The recommendations presented herein are based on Collin's site observations. It is recommended that a more in-depth rehabilitation study be conducted to determine the most economical approach to satisfy the existing and intended future use of the port facility. An in-depth study can be used to prioritize repair areas for planning purposes.

The cost estimates provided are opinion of construction costs only. These costs include labor, materials, equipment, mobilization, demobilization, contractor overhead, profit, and a contingency. In addition to the construction costs, the overall estimate includes costs for field investigations,

topographic survey, hydrographic survey, eelgrass study, benthic study, geotechnical investigation, environmental permitting, final design, and construction phase services. These costs can typically be approximated by adding 10-15% to the construction cost. The figures and opinions of probable cost presented within this report are based on Collins' experience with similar structures and studies and are intended to present construction alternatives and their costs that may be considered for this site. Costs can be refined when additional information is identified, and the design of the preferred alternative is progressed.

It is important to note that probable service life expectancy estimates are highly subjective and based on the existing conditions, type of construction, current usage and maintenance, and future environmental exposure. This estimate should be reconsidered after each inspection. In accordance with the MOP 130, it is recommended that structures in fair/poor condition in aggressive environments be inspected every four years. Significant storm events, such as hurricanes may warrant post-event inspections to identify if interim action may be necessary due to storm-related damage.

1.4 Design Standards

The inspection and evaluation were performed in accordance with the following standards pertaining to this type of facility:

- AASHTO "Manual for Maintenance Inspection of Bridges"
- American Society of Civil Engineers Manual of Practice 130 (ASCE MOP 130) "Waterfront Facilities Inspection and Assessment"
- FWHA guidelines for underwater inspection contained in the FHWA Technical Advisory, "Revisions to NBIS, T-5140.21"
- FHWA Manual "Underwater Inspection of Bridges"
- FHWA publication, "Bridge Inspector's Training Manual 90"
- National Bridge Inspection Standards (NBIS)

Information pertinent to the inspection not provided by resources made available to Collins has been supplemented by assumptions that were developed using the above guidelines, in addition to experience in similar applications.

2.0 Steel Sheet pile Bulkhead

2.1 Construction

Steel sheet pile bulkhead attributes to approximately 75% or 9,800 linear feet of the total hardened shoreline frontage to the Port and vary in age of construction. Of these 9,800 linear feet, approximately 5,500 linear feet are older sections constructed between 1983 to 1989 (1980s) and are typically located in Turning Basins 1 thru 3. The approximate, remaining 4,300 linear feet consist of newer sections constructed between 2001 and 2012 (2000s). These sections are mainly located in the most recent Port expansion of Turning Basin 4 in addition to the most recent bulkhead replacement sections primarily located east and west of Turning Basin 1, and adjacent to the main channel between Turning Basins 1 and 2. Both the 1980s and 2000s sections typically include a concrete deck, steel sheet pile cap, steel sheeting, internal tie back assembly, timber fender system, and associated steel fastener hardware. Additionally, there are several locations with pipe outfall penetrations, refer to the drawings and figures provided in Appendix A for approximate locations and specific configurations.

2.2 Summary of Findings

The 1980s steel sheet pile bulkheads are in overall **Poor Condition**, with up to 100% coating loss, moderate pitting, up to 1" scale throughout above water portions, with localized areas of thru holes in the sheeting (see Photo 2-1). Below water, the coating was observed to be intact with no notable deficiencies (see Photo 2-2). Specific locations, deficiencies, and photograph reference are identified in Table 2-1 below. Refer to Appendix B for ultrasonic thickness readings.

Station	Deficiency	Photo
5+20-7+04	Up to 100% Section Loss of Tieback bolts and washers	2-3
14+85	Corrosion holes at transition with associated subsidence	2-4
16+55	Corrosion holes	
31+90	Corrosion hole at transition	2-5
33+25	Top of sheets exposed with severe deterioration	2-6
Throughout	± 5% of all wales and timber fender piles either exhibit severe deterioration, are broken, or missing with heavy corrosion to associated hardware connections	2-7
38+50	Corrosion holes in flange and web	2-8

32+00-39+50	Loss of Tieback assembly	2-9
40+00-40+50	Corrosion holes	2-10
55+41	Corrosion hole at transition	2-11
62+85-63+75	Loss of Tieback assembly with active fill loss	2-12
65+75	Corrosion holes in web and flange	2-13

Table 2-1: 1980s Steel Sheetpile Deficiencies

The 2000s steel sheetpile bulkheads are in overall **Fair Condition**, with up to 50% coating loss and light pitting throughout above water portions (see Photo 2-14). Below water, the coating was observed to be intact with no notable deficiencies (see Photo 2-15). Specific locations, deficiencies, and photograph reference are identified in Table 2-2 below. Refer to Appendix B for ultrasonic thickness readings.

Station	Deficiency	Photo
70+00-97+50	Regular washers on tieback assembly	2-16
70+00-97+50	± 50% of lifting holes in sheets have no backing material	2-17

Table 2-2: 2000s Steel Sheetpile Deficiencies

For additional photos of deficiencies and typical conditions of the steel sheet pile bulkhead, see Photos 2-18 to 2-29.

2.3 Conclusions and Recommendations

Based on findings observed in both above and below water investigation of the steel sheetpile bulkhead, Collins concludes and recommends the following:

- The 1980s steel sheet pile bulkheads are approaching the end of their useful service life in their current state. It is recommended that a comprehensive repair/rehabilitation program be undertaken within approximately the next 5 years to reduce the likelihood that the advanced deterioration in the splash zone will impact the overall performance of the bulkhead. Several corrosion holes were observed within the splash zone and the tie-back assemblies are severely deteriorated along widespread portions of the site. Continued deterioration in these areas can lead to failure of the wall due to failure of the sheet piles and/or tie-back assemblies, which can lead to horizontal movement of the wall and upland damage or serviceability restrictions. It is recommended that these bulkhead sections be rehabilitated by installing a concrete facing

extending from approximately 3' below MLW to the existing cap. This will require removal and replacement of the existing fendering systems to complete the work. Our rough order of magnitude conceptual cost estimate for this repair is approximately $13.8M for 5,775 linear feet of bulkhead, or approximately $2,400/ft.

- The 2000s and later steel sheet pile bulkheads are generally in fair to good condition. No widespread repair or rehabilitation measures are recommended at this time. Based on the existing conditions, it is anticipated that these bulkhead sections have approximately 10 to 20 years of remaining service life.

2.4 Photos

Photo 2-1 – Typical Above Water Condition of 1980s Steel with Localized Thru Hole (Sta 113+00 Shown)

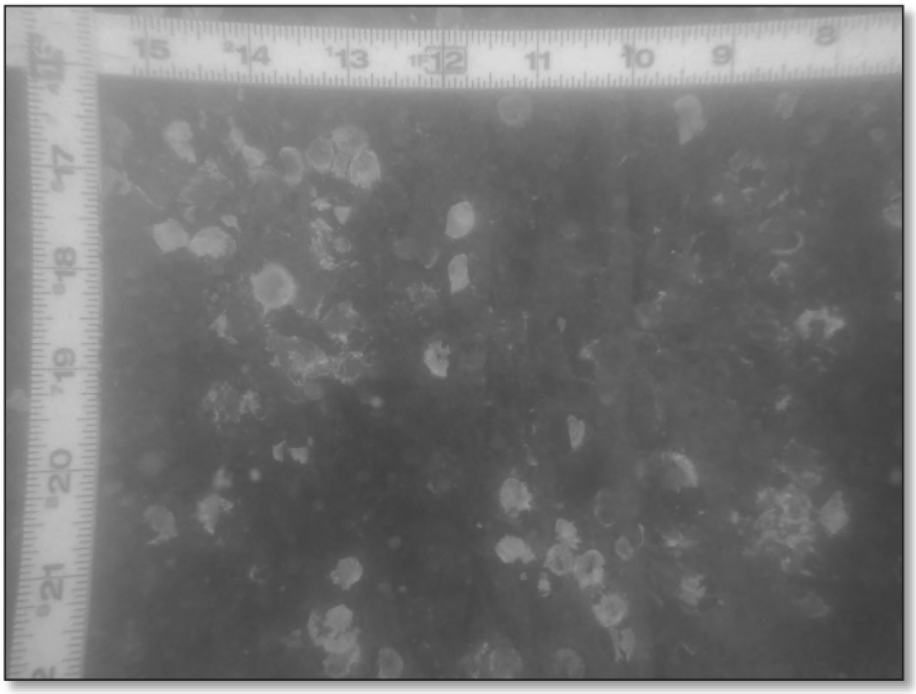


Photo 2-2 – Typical Underwater Condition of 1980s Steel (coating generally intact)

Photo 2-3 - Section Loss in Tieback Bolts and Washers between Sta 5+20-7+04

Photo 2-4 – Advanced Deterioration of Sheet Piles and Tie-Back Assembly (Sta 14+85)

Photo 2-5 - Corrosion Holes at Transition (Sta 31+90)

Photo 2-6 – Corrosion Holes at Top of Sheets (Sta 33+25)

Photo 2-7 - Broken Fender Piles (Sta 31+83 Shown)

Photo 2-8 – Corrosion Holes in Sheeting at Sta 38+50

Photo 2-9 – ~100 % Section Loss in Tieback Assembly (Sta 32+00-39+50)

Photo 2-10 – Corrosion Holes in Sheeting (Sta 40+00-40+50)

Photo 2-11 – Corrosion Hole at Transition (Sta 55+41), Concrete Fill Visible

Photo 2-12 – ~100 % Loss in Tieback Assembly with Active Fill Loss (62+85-63+75)

Photo 2-13 – Corrosion Holes in Sheeting (Sta 65+75)

Photo 2-14 - Typical Above Water Condition of 2000s Steel (Sta 1+00 Shown)

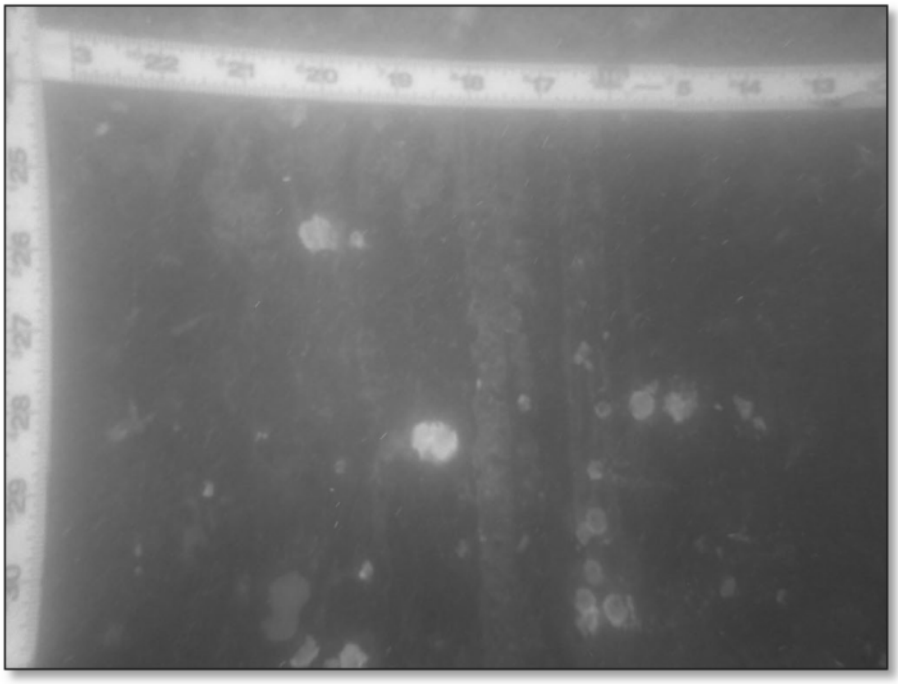


Photo 2-15 – Typical Underwater Condition of 2000s Steel (Coating Intact)

Photo 2-16 – Regular Washers on Tieback Assembly (Sta 70+00-97+50)

Photo 2-17 – Missing Backing Material to Lifting Holes (70+00-97+50)

Photo 2-18 – Typical Conditions 0+00-1+88 (Outfall at 0+25)

Photo 2-19 – Typical Conditions 1+88-3+34

Photo 2-20 – Typical Conditions 5+20-7+04

Photo 2-21 – Typical Conditions 19+68-24+79

Photo 2-22 – Typical Conditions 31+90-55+91 (corrosion hole at 37+00)

Photo 2-23 – Typical Conditions 31+90-55+91 (~100% loss of tie-back bolt heads)

Photo 2-24 – Typical Conditions 55+91-59+83

Photo 2-25 – Typical Conditions 59+83-62+85 (boat lift)

Photo 2-26 – Typical Conditions 62+85-70+00 (corrosion hole at 69+80)

Photo 2-27 – Typical Conditions 70+00-97+50

Photo 2-28 – Typical Conditions 97+50-110+80

Photo 2-29 – Typical Conditions 110+80-120+50 (corrosion hole at 116+00)

3.0 Timber Sheeting Bulkhead

3.1 Construction

Timber sheeting consists of approximately 525 linear feet of the total hardened shoreline frontage to the Port and varies in age of construction. Of these 525 linear feet, approximately 325 linear feet consist of older, vintage sections that support the Marine Railway area, located north of Turning Basin 1. Typical construction of this section includes vertical timber planks with two continuous, horizontal timber bracing components, and intermittently spaced timber king piles. The approximate, remaining 200 linear feet consist of newer sections constructed in 1987, located west of Turning Basin 1. Typical construction of this section includes timber decking, stringers, and a split pile cap, with vertical timber planks that are laterally braced by two continuous timber wales and supported by intermittently spaced timber king piles. Refer to the drawings and figures provided in Appendix A for approximate locations and specific configurations.

3.2 Summary of Findings

The older vintage timber sheeting bulkheads at the north end of Turning Basin #1 are in overall **Serious Condition**, with horizontal settlement, heavy deterioration and rot, with sinkholes throughout the immediate vicinity (see Photo 3-1). Below water, the timber sheets typically exhibit rot with moderate marine growth (see Photo 3-2). Specific locations, deficiencies, and photograph reference are identified in Table 3-1 below.

Station	Deficiency	Photo
9+85-12+16	Seaward settlement	3-3
9+85-12+16	Seaward Settlement and Sinkholes throughout	3-4
13+30-13+66	Heavy deterioration and rot	3-5

Table 3-1: Older Vintage Timber Sheeting Deficiencies

The 1987 timber sheeting bulkhead from 16+60 to 18+48 is in overall **Fair Condition**, with minor checks and splits, and heavy corrosion in the steel fasteners (see Photos 3-6 and 3-7). Below water, the timber sheets typically moderate marine growth (see Photo 3-8).

The 1989 timber sheeting bulkhead from 3+34 to 5+20 is in overall **Poor Condition**, which is governed by severe section loss of the tie-back rod nuts, exhibiting up to approximately 100% section loss (see Photo 3-9).

3.3 Conclusions and Recommendations

Based on findings observed in both above and below water investigation of the timber sheeting bulkhead, Collins concludes and recommends the following:

- The timber bulkhead from 16+60 to 18+48 generally in fair condition. No widespread repair or rehabilitation measures are recommended at this time. Based on the existing conditions, it is anticipated that the bulkhead section has approximately 10 years of remaining service life.
- The timber bulkhead from 3+34 to 5+20 is in poor condition due to the severe deterioration of the tie-back nuts within the soldier piles. Based on the existing conditions, it is anticipated that the bulkhead section has approximately 5 to 10 years of remaining service life. It is recommended that this portion of wall be replaced with a new steel sheet pile bulkhead. Our rough order of magnitude conceptual cost estimate for this repair is approximately $800k for 186 linear feet of bulkhead, or approximately $4,300/ft.
- The timber bulkhead at the north end of Turning Basin #1 is in severe condition due to the advanced deterioration of the timber elements and horizontal displacement. Based on the existing conditions, the bulkhead is at the end of its useful services life. It is recommended that this portion of wall be replaced with a new steel sheet pile bulkhead. Our rough order of magnitude conceptual cost estimate for this repair is approximately $3.5M for 781 linear feet of bulkhead, or approximately $4,500/ft. Note that this repair recommendation and cost estimate includes the deteriorated concrete bulkheads at the north end of Turning Basin #1 from 7+04 to 14+85.

3.4 Photos

Photo 3-1 - Older Vintage Timber Sheeting Exhibiting Split Planks (Sta 12+50 Shown)

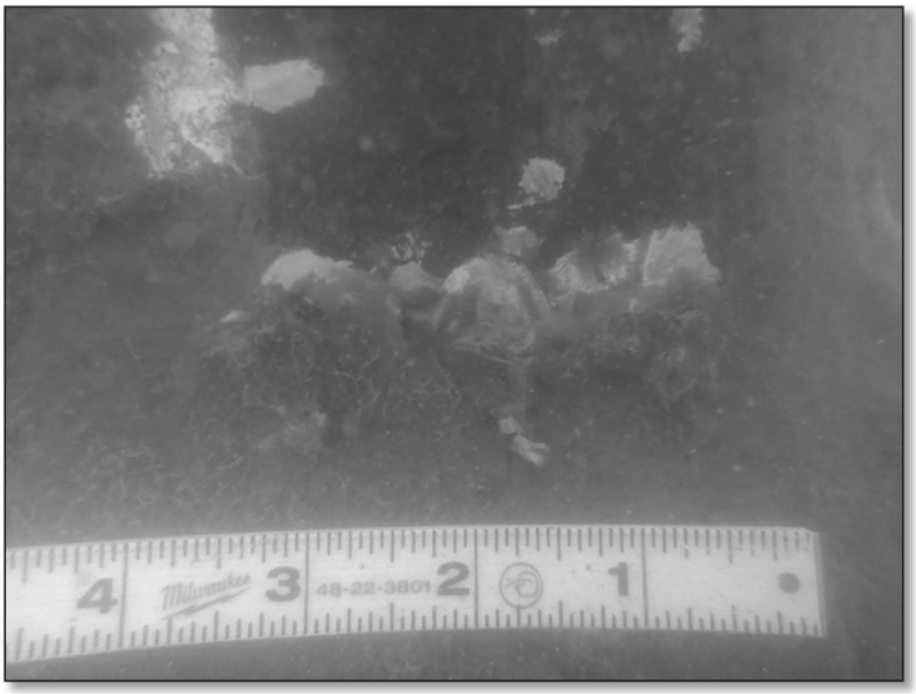


Photo 3-2 – Typical Underwater Condition of Vintage Timber Sheeting

Photo 3-3 – Seaward Settlement (Sta 9+85-12+16)

Photo 3-4 – Seaward Settlement and Sinkholes Throughout (Sta 9+85-12+16)

Photo 3-5 – Heavy Deterioration and Rot in Timber Sheeting (Sta 13+30-13+66)

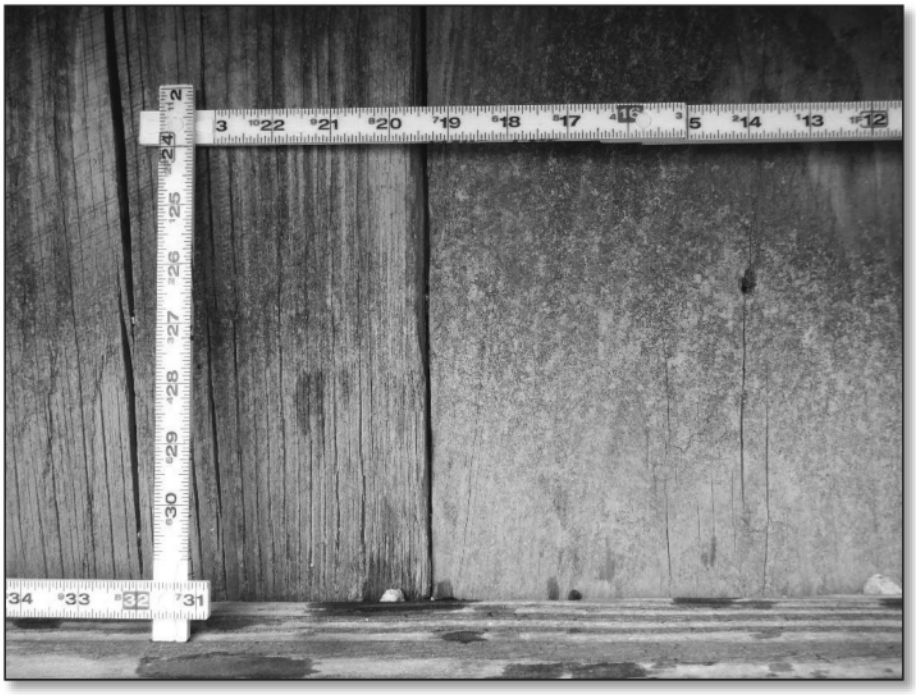


Photo 3-6 – Typical Above Water Condition of 1987 Timber Sheeting (Sta 17+00 Shown)

Photo 3-7 – Heavy Corrosion in Steel Fasteners at 1987 Timber Sheeting (Sta 16+60-18+48)

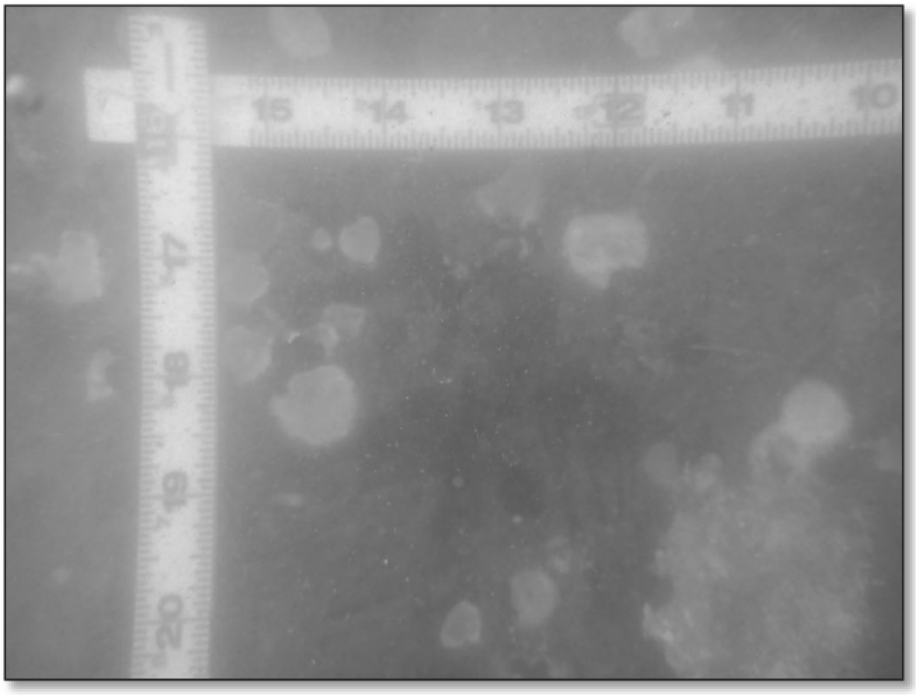


Photo 3-8 – Typical Underwater Condition of 1987 Timber Sheeting

Photo 3-9 – ~100% Section Loss of the Tie-Back Rod Nuts (3+34 to 5+20)

4.0 Concrete Sheeting Bulkhead

4.1 Construction

Concrete sheeting consists of approximately 1350 linear feet of the total hardened shoreline frontage to the Port. Of this 1350 linear feet, approximately 650 linear feet are located near the vicinity of the marine railway area and north of Turning Basin 1. The remaining approximate 700 linear feet are located between Turning Basins 1 and 2. Typical construction of both sections are of 1970 and 1971, and consist of a concrete cap, vertical interlocking concrete panels, and intermittently spaced timber fender piles. A concrete slab is located along concrete sections between Turning Basins 1 and 2 only. Additionally, there are several locations with pipe outfall penetrations, refer to the drawings and figures provided in Appendix A for approximate locations and specific configurations.

4.2 Summary of Findings

The concrete sheeting bulkheads at the north end of Turning Basin 1 are in overall **Severe Condition**, with spalls throughout and sinkholes with active fill loss (see Photo 4-1). Below water, the concrete sheets typically exhibit light abrasion with moderate marine growth (see Photo 4-2). Specific locations, deficiencies, and photograph reference are identified in Table 4-1 below.

Station	Deficiency	Photo
13+66-14+85	Sinkholes throughout behind cap	4-3

Table 4-1: Concrete Sheeting (North of Turning Basin 1) Deficiencies

The concrete sheeting bulkheads near the main channel and between Turning Basins 1 and 2 are in overall **Poor Condition**, with longitudinal cracking with rust staining, and delamination and spalls at the edges of the planks and caps (see Photo 4-3). Below water, the concrete sheets typically exhibit light abrasion with moderate marine growth (see Photo 4-2) Specific locations, deficiencies, and photograph reference are identified in Table 4-2 below.

Station	Deficiency	Photo
27+30	10"W x 6'H gap in sheets below MLW water, with fill visible (apparent construction defect)	4-4
28+85-31+90	Longitudinal cracking with rust staining	4-5
28+85-31+90	Delamination and spalls at edges	4-6 & 4-7

Table 4-2: Concrete Sheeting (Between Turning Basins 1 and 2) Deficiencies

4.3 Conclusions and Recommendations

Based on findings observed in both above and below water investigation of the concrete sheeting bulkhead, Collins concludes and recommends the following:

- The concrete bulkhead at the north end of Turning Basin #1 is in severe condition due to the severe deterioration of the concrete cap and the inability to adequately retain fill. Based on the existing conditions, the wall is at the end of its services life. The replacement cost for this portion of the wall is included in the estimate above for the adjacent timber bulkhead and includes 7+04 to 14+85.
- The concrete bulkhead from 24+79 to 31+90 is generally in poor condition, due to deterioration of the concrete cap. Repair recommendations include repairing the concrete cap to reduce the likelihood of more widespread deterioration of the bulkhead and to reduce the likelihood that the cap deterioration with impact the overall performance of the wall. In its current state, it is estimated that the wall has approximately 10 to 15 years of service life remaining. It is

anticipated that rehabilitation can prolong the service life of the structure for approximately 10 to 20 additional years. Our rough order of magnitude conceptual cost estimate for this repair is approximately $300k for 711 linear feet of bulkhead, or approximately $400/ft.

4.4 Photos

Photo 4-1 – Typical Above Water Condition of Concrete Sheeting North of Turning Basin 1 (Sta 14+50 Shown)

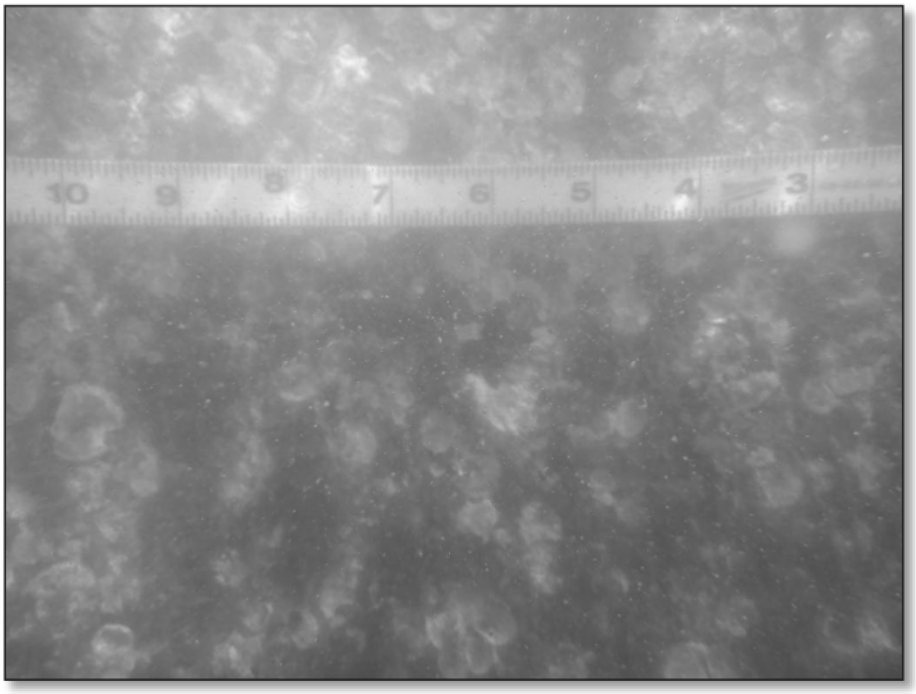


Photo 4-2 – Typical Underwater Condition of Concrete Sheeting

Photo 4-3 - Sinkholes with Active Fill Loss (Sta 14+85 Shown) (Some Gravel Filled)

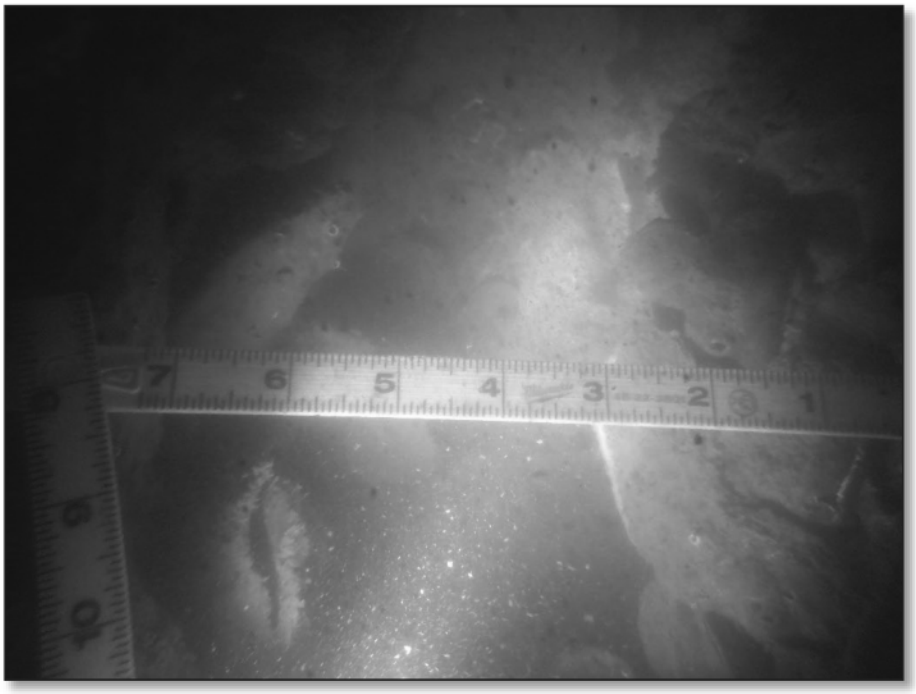


Photo 4-4 – 10”W x 6’H Gap in Sheets with Fill Visible at 27+30 (Apparent Construction Defect)

Photo 4-5 – Edge Spalls and Longitudinal Cracking with Rust Staining (Sta 28+85-31+90)

Photo 4-6 – Edge Spalls and Longitudinal Cracking with Rust Staining (Sta 28+85-31+90)

5.0 Fender System

The fender system varies along the length of the bulkhead. It typically consists of two or three horizontal 12 x 12 timber members with and without vertical timber piles. Much of the 1980s fendering has been removed and/or is in poor condition, which his governed by severe deterioration of the steel hardware in the splash zone that fastens the timber to the sheet pile bulkhead.

The timber piles appear to have been installed after the original construction and are typically in fair condition. The timber fender pile hardware is typically connected to the concrete deck or bulkhead cap above the splash zone. Approximately 5% of the timber piles along the bulkhead are typically cracked and broken within the splash zone, likely due to impact damage.

Steel pipe mooring/fender piles were installed between Sta 45+74 and 54+50. These piles are in good condition. UT readings of the piles in the splash zone to the mudline were typically 0.250", with no indications of section loss.

Recommendations for the Fender System are included in the bulkhead sections of this report.

Typical conditions are presented in the following photographs:

Photo 5-1 – Typical Condition of 1980s Fender System

Photo 5-2 – Typical Condition of Fender Piles

6.0 Topside

There are several upland construction types and vintages along the length of the bulkhead. The upland area within the immediate vicinity of the bulkhead typically includes a concrete slab of varying width along the site. The slabs are typically in fair to satisfactory condition, exhibiting intermittent hairline transverse cracking in some areas.

Recommendations for the Topside are included in the bulkhead sections of this report.
Typical conditions and notable findings are presented in the following photographs:

Photo 6-1 – Typical Condition of Topside, with Intermittent Transverse Cracks

Photo 6-2 – Minor Impact Damage at Sta 59+50

Photo 6-3 – Impact Damage at Sta 66+60

7.0 Timber Piers

7.1 Construction

Five timber piers are located along the south of Turning Basin 3 and the Main Channel and are labeled one through five in east to west orientation, respectively. Pier 1 is approximately a 1000 ft long x 8 ft to 12 ft wide (varies) timber structure that consists of decking and handrails, stringers supported by split pile caps and piles, with timber cross bracing (see Photo 7-1). Six timber trestles are intermittently spaced to provide access throughout the length of the pier. In addition, lateral bents members are intermittently spaced along the pier to provide additional lateral support.

Piers 2 and 3 are approximately 150 ft long x 8 ft wide and 165 ft long x 8 ft wide L-shape timber structures, respectively. Both structures consist of decking and stringers supported by split pile caps and piles (see Photo 7-2). Three timber fingers at each pier are intermittently spaced for the docking of small, recreational vessels.

Pier 4 is approximately a 725 ft long timber structure varying in configuration and construction. Approximately 225 linear feet of the eastern portion of Pier 4 is primarily 8 ft wide at finger pier access locations, with a portion thereof that is approximately 50 ft long x up to 40 ft wide. The eastern portion consists of timber decking, stringers supported by split pile caps, and piles. One timber access trestle provides access to this location. Four timber finger piers are intermittently spaced for docking of small, recreational vessels (see Photo 7-3). The remaining, approximately 500 linear ft to Pier 4 consists of a creosote treated timber structure that is approximately 8 ft wide (see Photo 7-4). Six timber trestles are intermittently spaced to provide access throughout the length of the pier section. In addition, lateral bracing bents are intermittently spaced along the pier. Approximately 275 linear feet thereof and along the western portion of Pier 4, the superstructure and deck components to both the pier and access trestles have been removed, the timber piles remain (see Photo 7-5).

Pier 5 is approximately a 240 ft long x 8 ft wide C-shape timber structure that consists of decking and handrails, stringers supported by split piles caps and piles (see Photo 7-6). Approximately 140 ft of the southern extents of Pier 5 includes a covered structure consisting of a metal roof and associated timber framing and metal fencing. Refer to the drawings and figures provided in Appendix A for approximate locations and specific configurations.

7.2 Summary of Findings

Pier 1 is in overall **Fair Condition**, with approximately 5% of bents that exhibit missing or loose connection bolts. There is rose budding with up to 90% section loss in cross bracing fasteners near the low waterline and approximately 5% of all handrails and bracing at Pier 1 require replacement (see Photo 7-7). Specific deficiencies include two isolated locations with a split pile cap (see Photo 7-8).

Piers 2 and 3 are in overall **Severe Condition**, with up to 100% section loss on pile cap hardware (see Photo 7-9). Additionally, there is a failed finger at Pier 3 (see Photo 7-10).

Pier 4 is in overall **Severe Condition**, with up to 25% of bents at the eastern 225 linear feet that exhibit up to 100% section loss on pile cap hardware (see Photo 7-11). The remaining western portion of the pier is in fair condition.

Pier 5 is in overall **Severe Condition**, with up to 100% section loss on pile cap hardware throughout (see Photo 7-12).

There are two additional piers at the north end of Turning Basin #1 adjacent to the marine railways. The western pier is in a state of disrepair (see Photo 7-13). The eastern pier is in **Severe Condition**, which is governed by the severely deteriorated pile cap hardware (see Photo 7-14).

7.3 Conclusions and Recommendations

Based on findings observed in both above and below water investigation of the timber piers, Collins concludes and recommends the following:

- Pier 1: Based on the existing conditions, the pier has approximately 10 to 15 years of service life remaining. It is recommended that discrete repairs be performed to extend the service life of the structure. These repairs consist of discrete repairs to the substructure, superstructure, handrails, bracing members and hardware. Our rough order of magnitude opinion of probable construction costs for these repairs is $200k.
- Pier 2: Based on the existing conditions, the pier has approximately 5 years of service life remaining. It is recommended that discrete repairs be performed to extend the service life of the structure. These repairs consist of discrete repairs to the substructure, superstructure, handrails, bracing members and hardware. Our rough order of magnitude opinion of probable construction costs for these repairs is $70k. **Note that failure of the pile cap hardware can lead to destabilization of the superstructure and poses an unsafe condition for occupants. Use restrictions are recommended until repairs can be completed.**
- Pier 3: Based on the existing conditions, the pier has approximately 5 years of service life remaining. It is recommended that discrete repairs be performed to extend the service life of the structure. These repairs consist of discrete repairs to the substructure, superstructure, handrails, bracing members and hardware. Our rough order of magnitude opinion of probable construction costs for these repairs is $70k. **Note that failure of the pile cap hardware can lead to destabilization of the superstructure and poses an unsafe condition for occupants. Use restrictions are recommended until repairs can be completed.**

- Pier 4: Based on the existing conditions, the pier has approximately 5 years of service life remaining, which is governed by the eastern side of the pier. It is recommended that discrete repairs be performed to extend the service life of the structure. These repairs consist of discrete repairs to the substructure, superstructure, handrails, bracing members and hardware. Our rough order of magnitude opinion of probable construction costs for these repairs is $100k. **Note that failure of the pile cap hardware can lead to destabilization of the superstructure and poses an unsafe condition for occupants. Use restrictions are recommended until repairs can be completed.**
- Pier 5: Based on the existing conditions, the pier has approximately 5 years of service life remaining. It is recommended that discrete repairs be performed to extend the service life of the structure. These repairs consist of discrete repairs to the substructure, superstructure, handrails, bracing members and hardware. Our rough order of magnitude opinion of probable construction costs for these repairs is $90k. **Note that failure of the pile cap hardware can lead to destabilization of the superstructure and poses an unsafe condition for occupants. Use restrictions are recommended until repairs can be completed.**
- Piers at the north end of Turning Basin #1: Based on the existing conditions, the piers are at the end of their useful service lives. Our rough order of magnitude opinion of probable construction costs for removing and replacing the piers is $120k each, or $240k for both.

7.4 Photos

Photo 7-1 – Pier 1 Looking East

Photo 7-2 – Piers 2 and 3 Looking North

Photo 7-3 – Pier 4 Eastern Portion Looking West

Photo 7-4 – Pier 4 Creosote Timber Portion Looking East

Photo 7-5 – Pier 4 Western Portion Looking West

Photo 7-6 – Pier 5 Looking North

Photo 7-7 – Failed Handrail at Pier 1

Photo 7-8 – Split Pile Cap at Pier 1

Photo 7-9 – Severe Corrosion in Pile Cap Hardware at Piers 2 and 3

Photo 7-10 – Failed Finger at Pier 3

Photo 7-11 – Failed Pile Cap Hardware at Pier 4

Photo 7-12 – Failed Pile Cap Hardware at Pier 5

Photo 7-14 – Western Pier in State of Disrepair Adjacent to Marine Railways

Photo 7-15 – Eastern Pier in Severe Condition Adjacent to Marine Railways

8.0 Articulated Concrete Mat

8.1 Construction

The articulated concrete mat (ACM) consists of over 2,000 linear feet of the total hardened shoreline frontage to the Port and begins at the termination of the steel sheetpile bulkhead at Turning Basin 3 and extends along Margerum Road and the bilge water reclamation station. The ACM terminates approximately 325 linear feet prior to the westerly end of the rip rap breakwater jetty, where a combination of unprotected shore and coral rip rap was observed. Refer to the drawings and figures provided in Appendix A for approximate locations and specific configurations.

8.2 Summary of Findings

The ACM is in overall **Fair Condition**, with minor settlement and heaving typically above water throughout (see Photos 6-1 through 6-4).

8.3 Conclusions and Recommendations

Based on findings observed in both above and below water investigation of the ACM, Collins concludes and recommends the following:

- Based on the overall fair condition rating of the ACM, it is anticipated that the ACM has approximately 15 to 20 years of service life remaining. No widespread rehabilitation or repair measures are recommended at this time.

8.4 Photos

Photo 8-1 – ACM Typical Condition

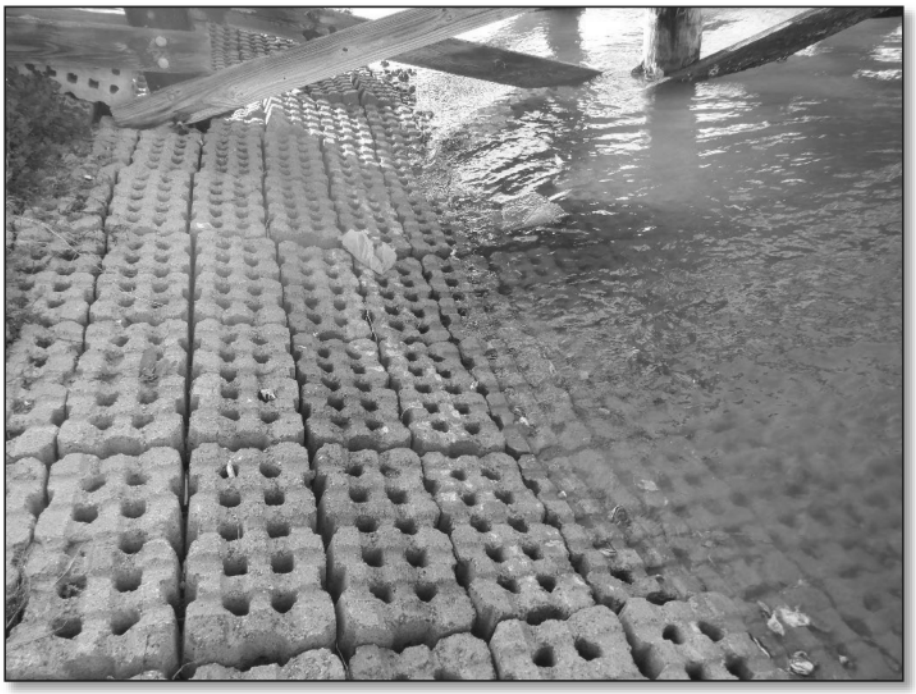
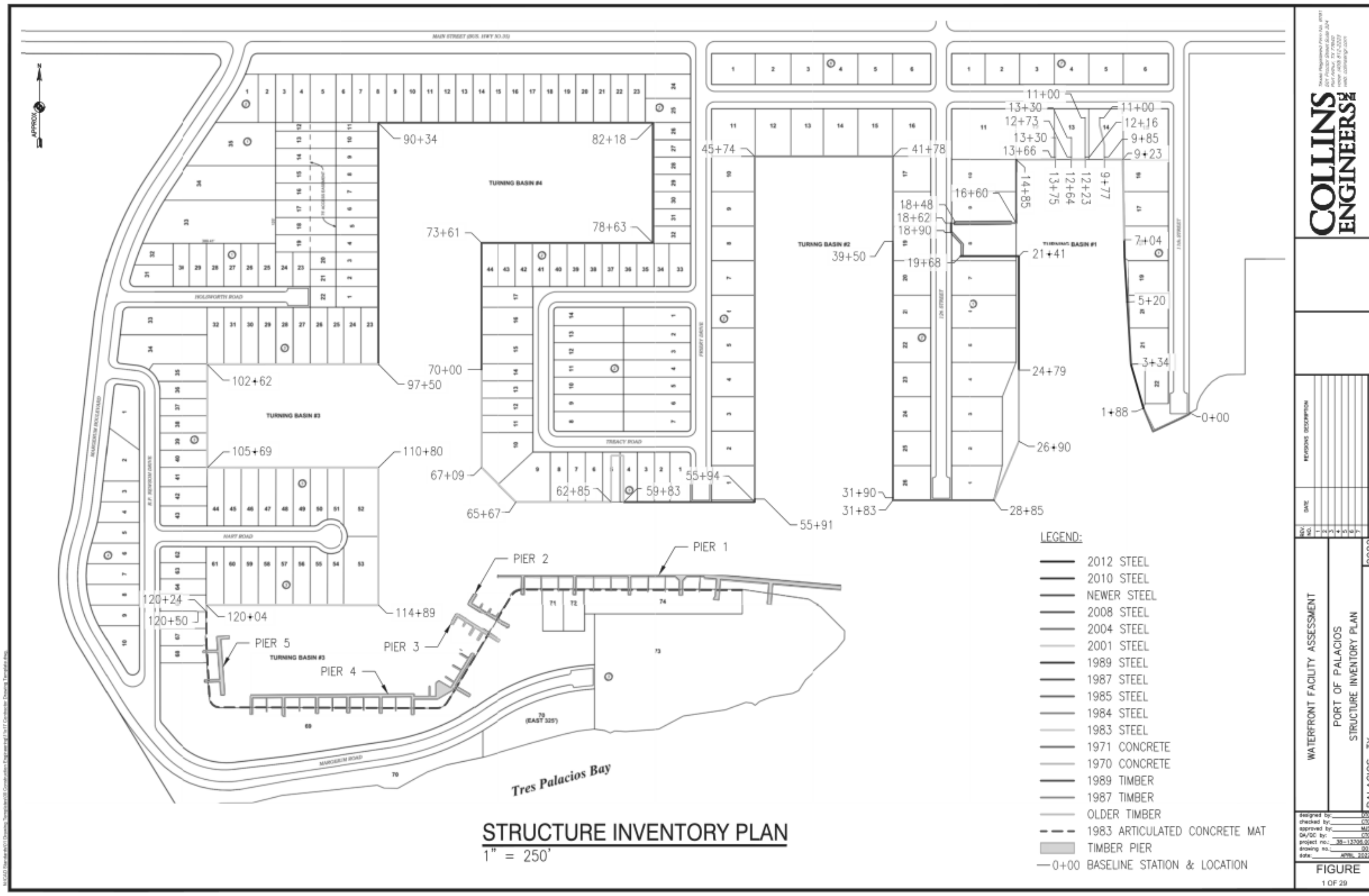


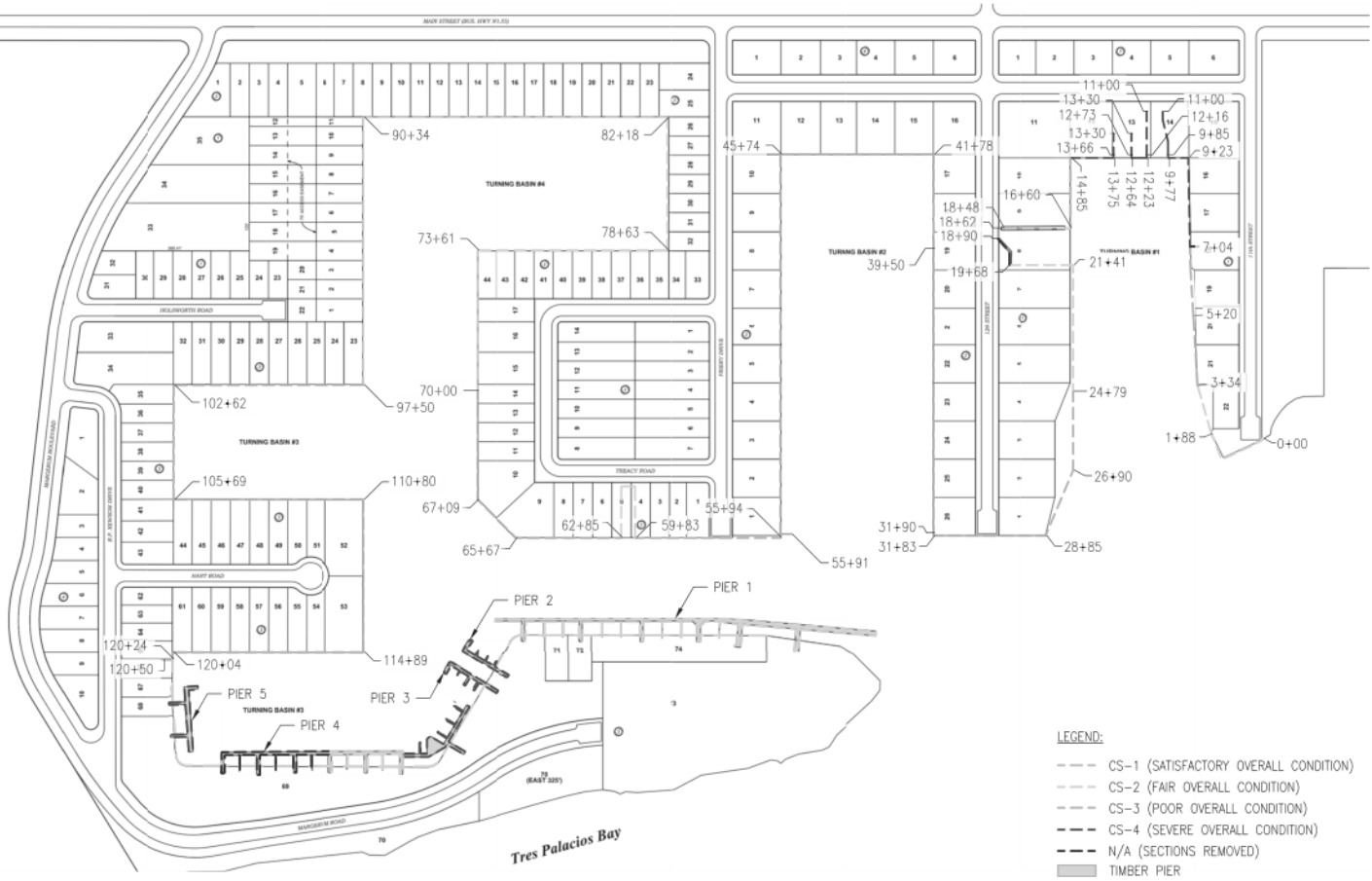
Photo 8-2 – ACM Typical Condition

Photo 8-3 – ACM Typical Settlement

Photo 8-4 – ACM Typical Heaving

APPENDIX A: FACILITY DRAWINGS & FIGURES


STRUCTURE INVENTORY PLAN
1" = 250'
LEGEND:
2012 STEEL
2010 STEEL
NEWER STEEL
2008 STEEL
2004 STEEL
2001 STEEL
1989 STEEL
1987 STEEL
1985 STEEL
1984 STEEL
1983 STEEL
1971 CONCRETE
1970 CONCRETE
1989 TIMBER
1987 TIMBER
OLDER TIMBER
1983 ARTICULATED CONCRETE MAT
TIMBER PIER
0+00 BASELINE STATION & LOCATION
TURNING BASIN #1
TURNING BASIN #2
TURNING BASIN #3
TURNING BASIN #4
PIER 1
PIER 2
PIER 3
PIER 4
PIER 5
Tres Palacios Bay
COLLINS ENGINEERS
WATERFRONT FACILITY ASSESSMENT
PORT OF PALACIOS
STRUCTURE INVENTORY PLAN
PALACIOS, TX
2022
REVISIONS
FIGURE
1 OF 29



STRUCTURE CONDITION PLAN

1" = 250'

LEGEND:

- CS-1 (SATISFACTORY OVERALL CONDITION)
- CS-2 (FAIR OVERALL CONDITION)
- CS-3 (POOR OVERALL CONDITION)
- CS-4 (SEVERE OVERALL CONDITION)
- N/A (SECTIONS REMOVED)
- TIMBER PIER
- 0+00 BASELINE STATION & LOCATION

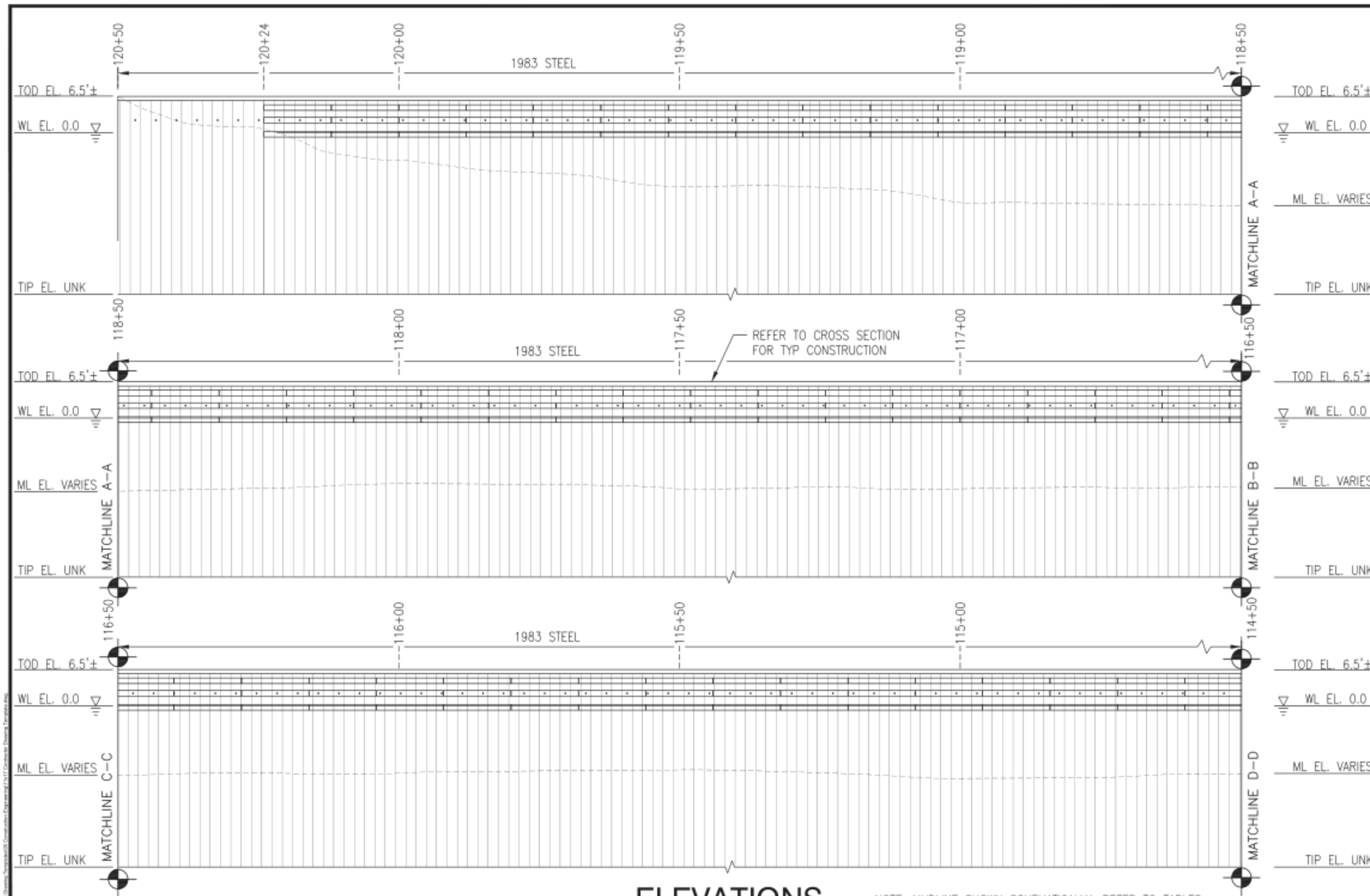
COLLINS ENGINEERS

NO.	DATE	REVISIONS DESCRIPTION
1		
2		
3		
4		
5		
6		
7		

WATERFRONT FACILITY ASSESSMENT
PORT OF PALACIOS
STRUCTURE CONDITION PLAN
PALACIOS, TX
2022

designed by: MP
checked by: CN
approved by: MP
QA/QC by: CN
project no.: 38-13706.00
drawing no.: 001
date: APRIL 2022

FIGURE
2 OF 29



ELEVATIONS

SCALE: 3/4" = 1'

NOTE: MUDLINE SHOWN SCHEMATICALLY, REFER TO TABLES IN FIGURES 23–28 FOR RECORDED MEASUREMENTS FROM TOP OF PILE CAP TO MUDLINE.

COLLINS ENGINEERS

REVISIONS

WATERFRONT FACILITY ASSESSMENT

PORT OF PALACIOS

BULKHEAD ELEVATION

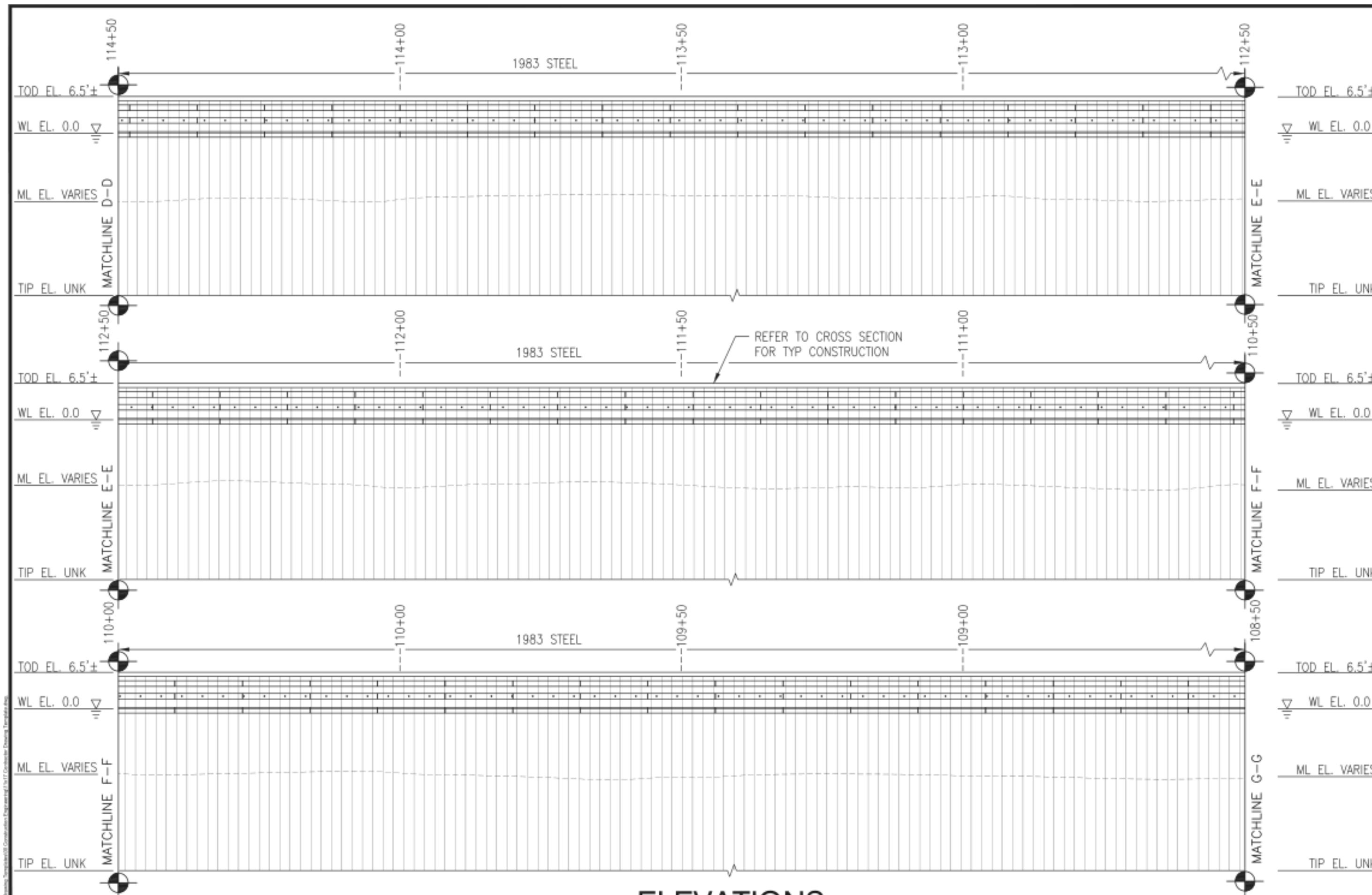
PALACIOS, TX

2022

designed by: DTC
checked by: CTC
approved by: MJS
QA/QC by: CTC
project no.: 38-13706.00
drawing no.: 001
date: APRIL 2022

FIGURE

3 OF 29



ELEVATIONS

SCALE: 3/4" = 1'

NOTE: MUDLINE SHOWN SCHEMATICALLY, REFER TO TABLES IN FIGURES 23–28 FOR RECORDED MEASUREMENTS FROM TOP OF PILE CAP TO MUDLINE.

COLLINS ENGINEERS INC

REV. NO.	DATE	REVISIONS DESCRIPTION
1		
2		
3		
4		
5		
6		
7		

REVISIONS

WATERFRONT FACILITY ASSESSMENT

PORT OF PALACIOS

BULKHEAD ELEVATION

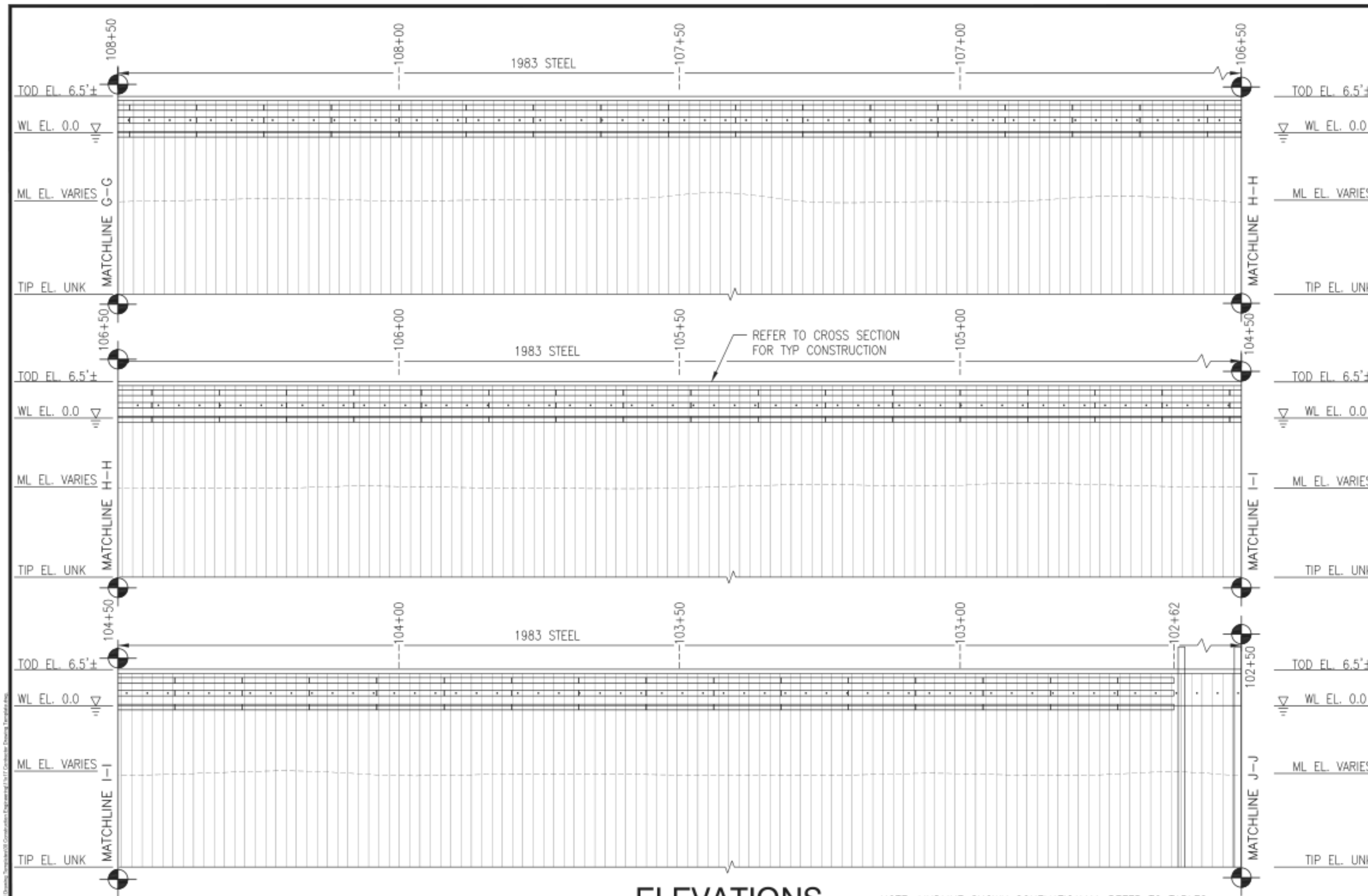
2022

PALACIOS, TX

designed by: DSG
checked by: CTC
approved by: MJS
QA/QC by: CTC
project no.: 38-13706.00
drawing no.: 001
date: APRIL 2022

FIGURE

4 OF 29



ELEVATIONS

SCALE: 3/4" = 1'

NOTE: MUDLINE SHOWN SCHEMATICALLY, REFER TO TABLES IN FIGURES 23–28 FOR RECORDED MEASUREMENTS FROM TOP OF PILE CAP TO MUDLINE.

COLLINS ENGINEERS INC

REVISIONS

REV. NO.	DATE	REVISIONS DESCRIPTION
1		
2		
3		
4		
5		
6		
7		

WATERFRONT FACILITY ASSESSMENT

PORT OF PALACIOS

BULKHEAD ELEVATION

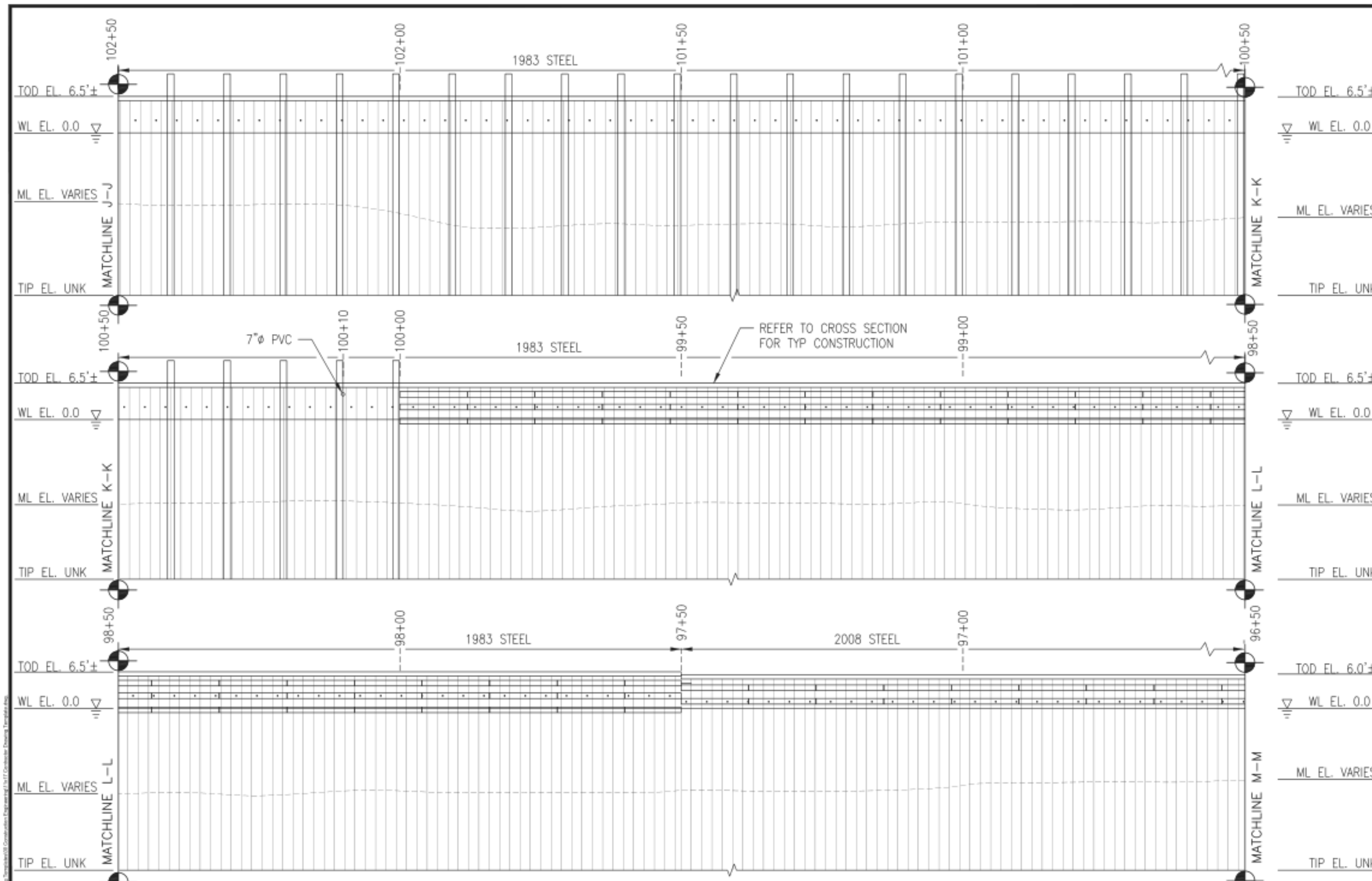
PALACIOS, TX

2022

designed by: CTC
checked by: CTC
approved by: MJS
QA/QC by: CTC
project no.: 38-13706.00
drawing no.: 001
date: APRIL 2022

FIGURE

5 OF 29



ELEVATIONS

SCALE: 3/4" = 1'

NOTE: MUDLINE SHOWN SCHEMATICALLY, REFER TO TABLES IN FIGURES 23–28 FOR RECORDED MEASUREMENTS FROM TOP OF PILE CAP TO MUDLINE.

COLLINS ENGINEERS INC

REVISIONS

WATERFRONT FACILITY ASSESSMENT

PORT OF PALACIOS

BULKHEAD ELEVATION

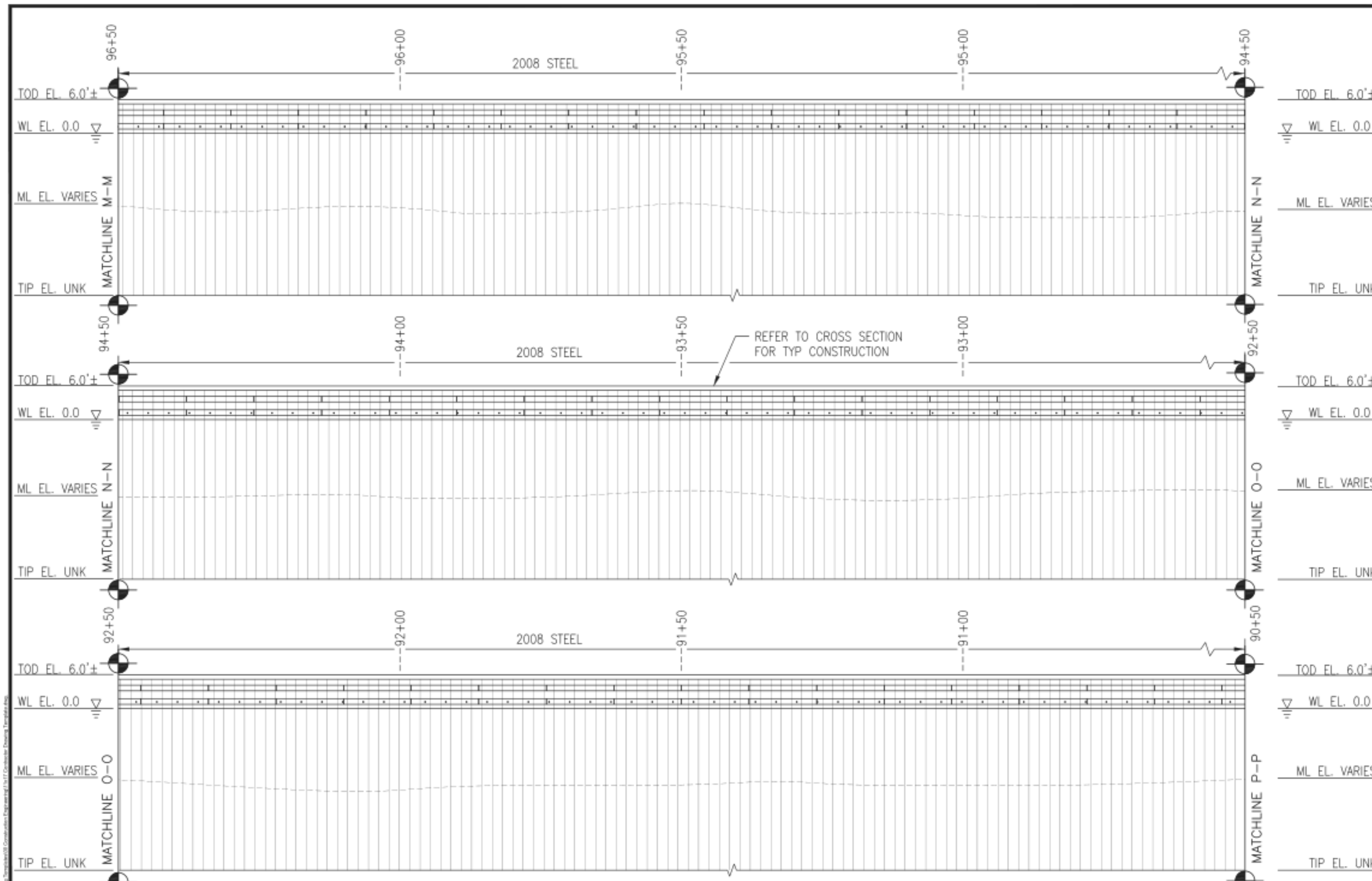
PALACIOS, TX

2022

designed by: CTC
checked by: CTC
approved by: MJS
QA/QC by: CTC
project no.: 38-13706.00
drawing no.: 001
date: APRIL 2022

FIGURE

6 OF 29



ELEVATIONS

SCALE: 3/4" = 1'

NOTE: MUDLINE SHOWN SCHEMATICALLY, REFER TO TABLES IN FIGURES 23–28 FOR RECORDED MEASUREMENTS FROM TOP OF PILE CAP TO MUDLINE.

COLLINS ENGINEERS

REVISIONS

WATERFRONT FACILITY ASSESSMENT

PORT OF PALACIOS

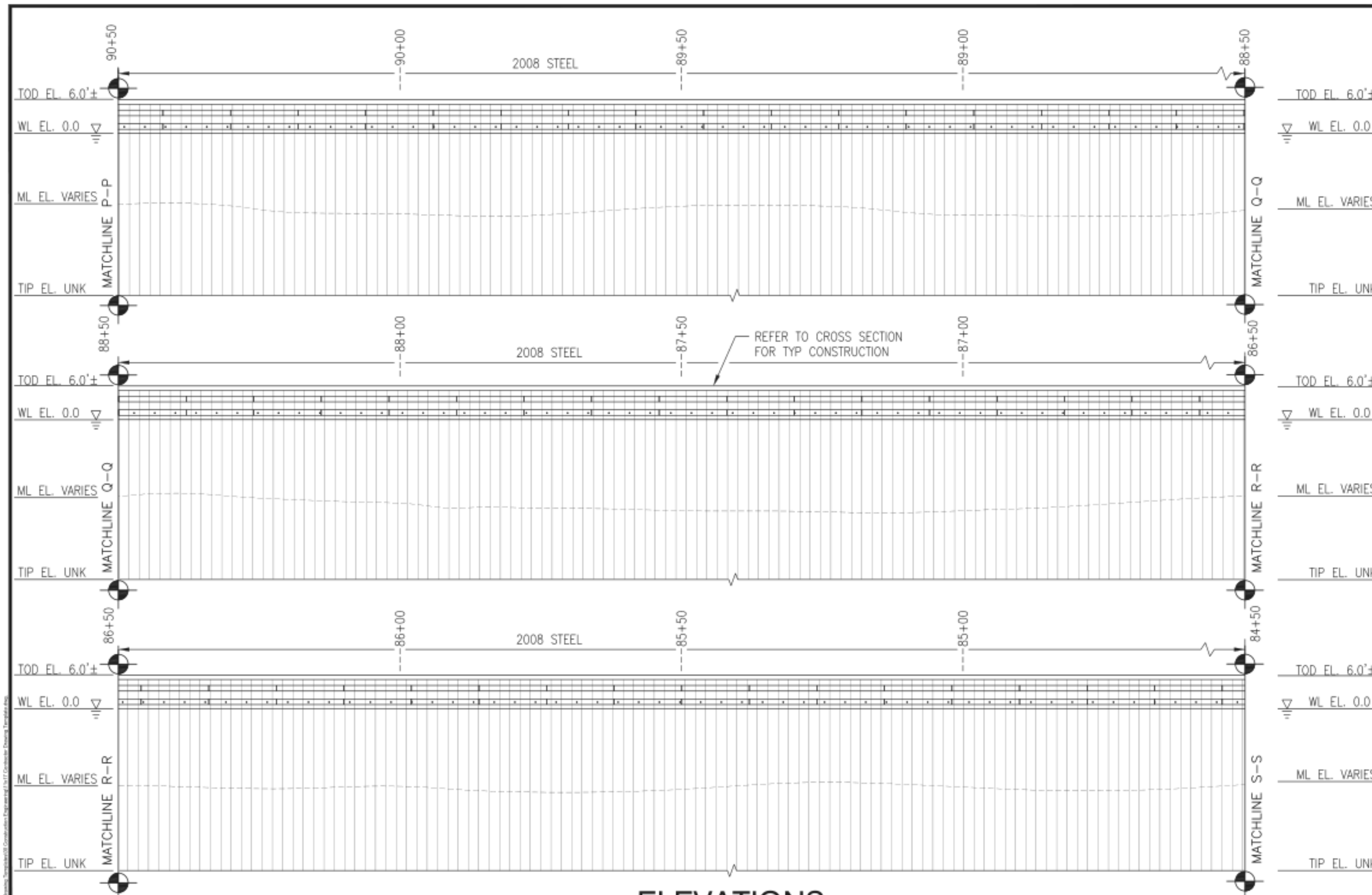
BULKHEAD ELEVATION

PALACIOS, TX

2022

FIGURE

7 OF 29



ELEVATIONS

SCALE: 3/4" = 1'

NOTE: MUDLINE SHOWN SCHEMATICALLY, REFER TO TABLES IN FIGURES 23–28 FOR RECORDED MEASUREMENTS FROM TOP OF PILE CAP TO MUDLINE.

COLLINS ENGINEERS

REVISIONS

WATERFRONT FACILITY ASSESSMENT

PORT OF PALACIOS

BULKHEAD ELEVATION

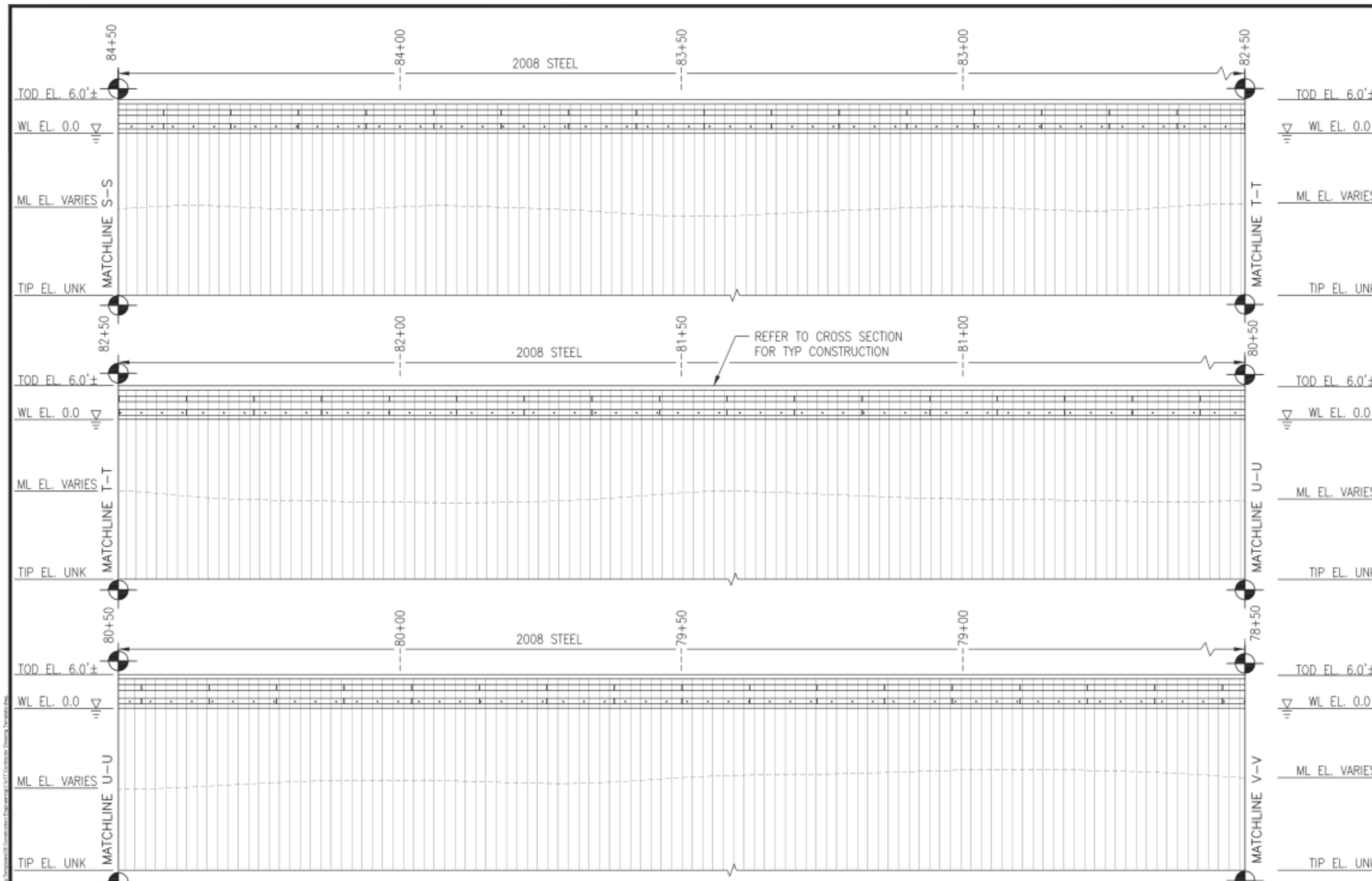
PALACIOS, TX

2022

designed by: DDG
checked by: CTC
approved by: MJS
QA/QC by: CTC
project no.: 38-13706.00
drawing no.: 001
date: APRIL 2022

FIGURE

8 OF 29



ELEVATIONS

SCALE: 3/4" = 1'

NOTE: MUDLINE SHOWN SCHEMATICALLY, REFER TO TABLES IN FIGURES 23–28 FOR RECORDED MEASUREMENTS FROM TOP OF PILE CAP TO MUDLINE.

COLLINS ENGINEERS INC

REV. NO.	DATE	REVISIONS DESCRIPTION
1		
2		
3		
4		
5		
6		
7		

REVISIONS

WATERFRONT FACILITY ASSESSMENT

PORT OF PALACIOS

BULKHEAD ELEVATION

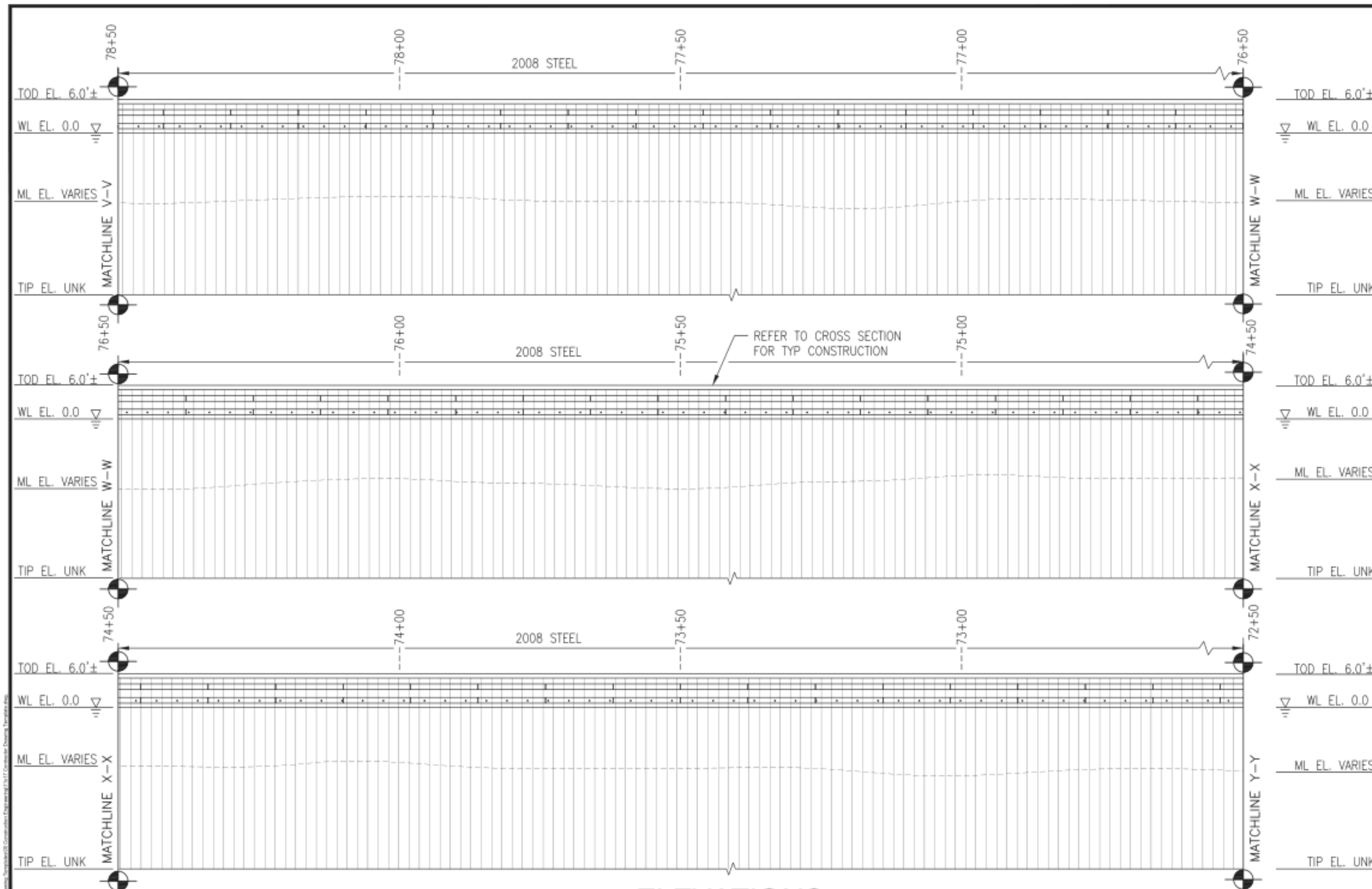
2022

PALACIOS, TX

designed by: CTC
checked by: CTC
approved by: MJS
QA/QC by: CTC
project no.: 38-13706.00
drawing no.: 001
date: APRIL 2022

FIGURE

9 OF 29



ELEVATIONS

SCALE: 3/4" = 1'

NOTE: MUDLINE SHOWN SCHEMATICALLY, REFER TO TABLES IN FIGURES 23–28 FOR RECORDED MEASUREMENTS FROM TOP OF PILE CAP TO MUDLINE.

COLLINS ENGINEERS

REVISIONS

WATERFRONT FACILITY ASSESSMENT

PORT OF PALACIOS

BULKHEAD ELEVATION

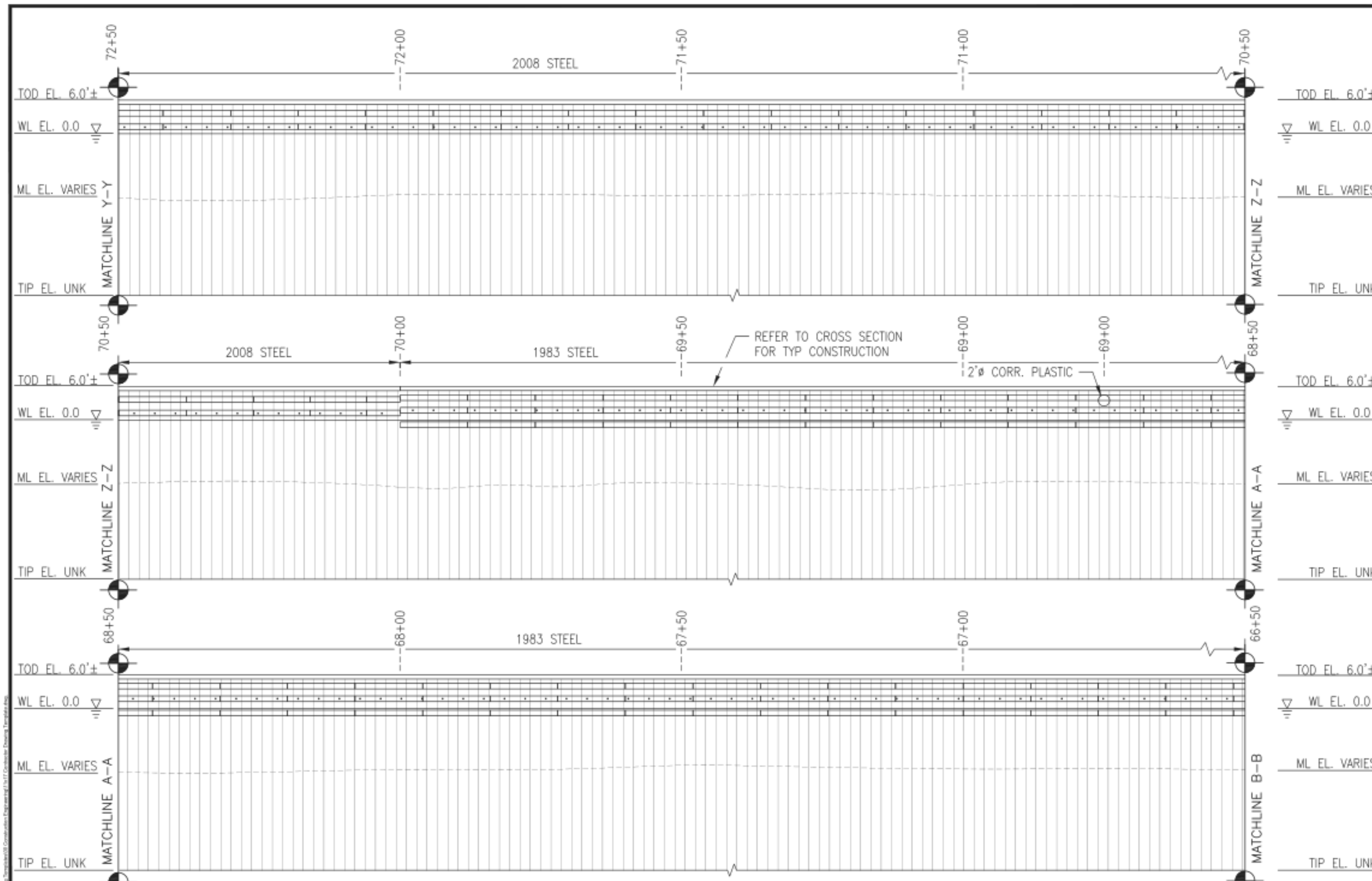
PALACIOS, TX

2022

designed by: CTC
checked by: CTC
approved by: MJS
QA/QC by: CTC
project no.: 38-13706.00
drawing no.: 001
date: APRIL 2022

FIGURE

10 OF 29



ELEVATIONS

SCALE: 3/4" = 1'

NOTE: MUDLINE SHOWN SCHEMATICALLY, REFER TO TABLES IN FIGURES 23–28 FOR RECORDED MEASUREMENTS FROM TOP OF PILE CAP TO MUDLINE.

COLLINS ENGINEERS INC

REVISIONS

WATERFRONT FACILITY ASSESSMENT

PORT OF PALACIOS

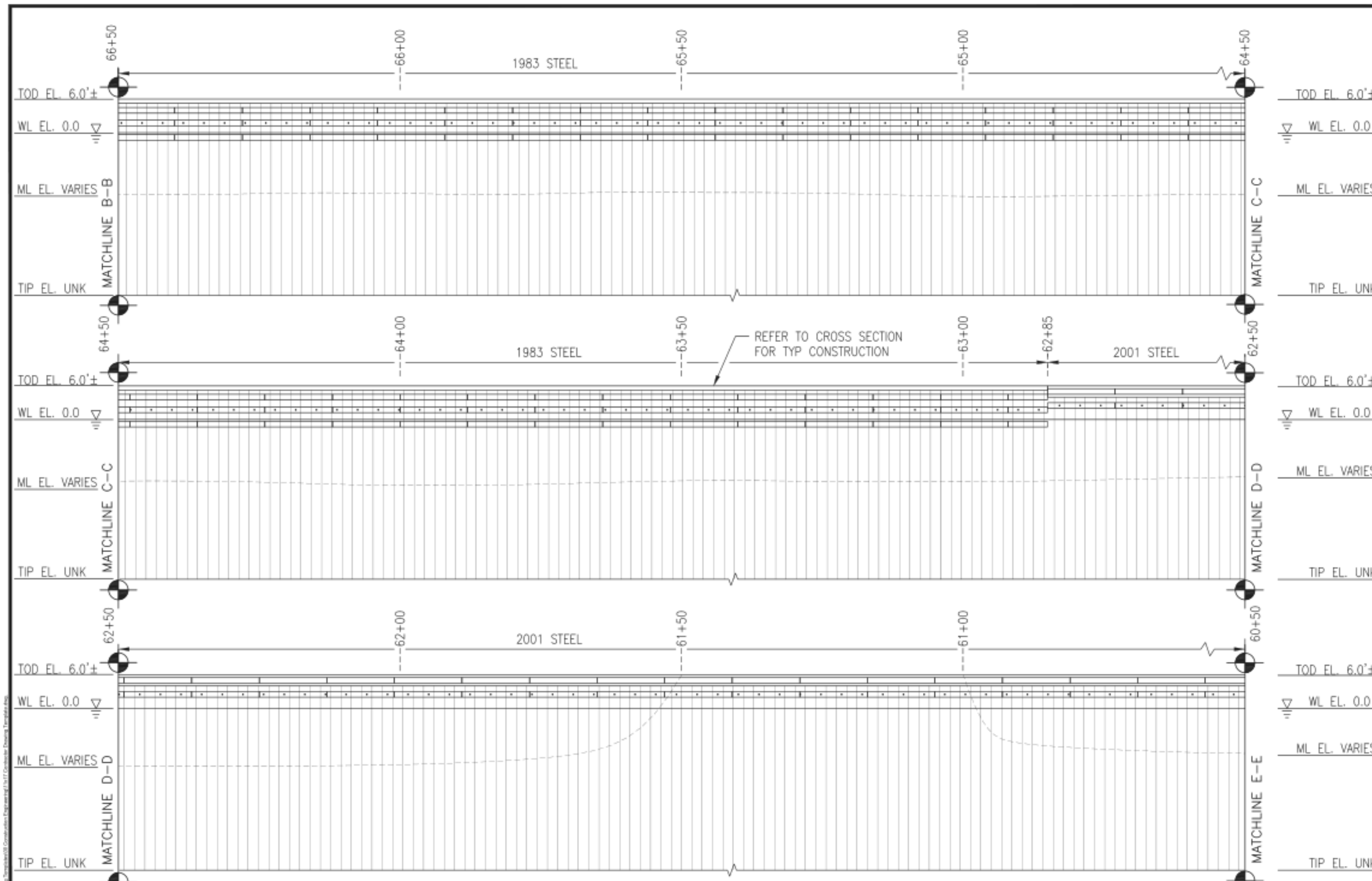
BULKHEAD ELEVATION

PALACIOS, TX

2022

designed by: DSC
checked by: CTC
approved by: MJS
QA/QC by: CTC
project no.: 35-13706.00
drawing no.: 001
date: APRIL 2022

FIGURE
11 OF 29



ELEVATIONS

SCALE: 3/4" = 1'

NOTE: MUDLINE SHOWN SCHEMATICALLY, REFER TO TABLES IN FIGURES 23–28 FOR RECORDED MEASUREMENTS FROM TOP OF PILE CAP TO MUDLINE.

COLLINS ENGINEERS INC

REV. NO.	DATE	REVISIONS DESCRIPTION
1		
2		
3		
4		
5		
6		
7		

REVISIONS

WATERFRONT FACILITY ASSESSMENT

PORT OF PALACIOS

BULKHEAD ELEVATION

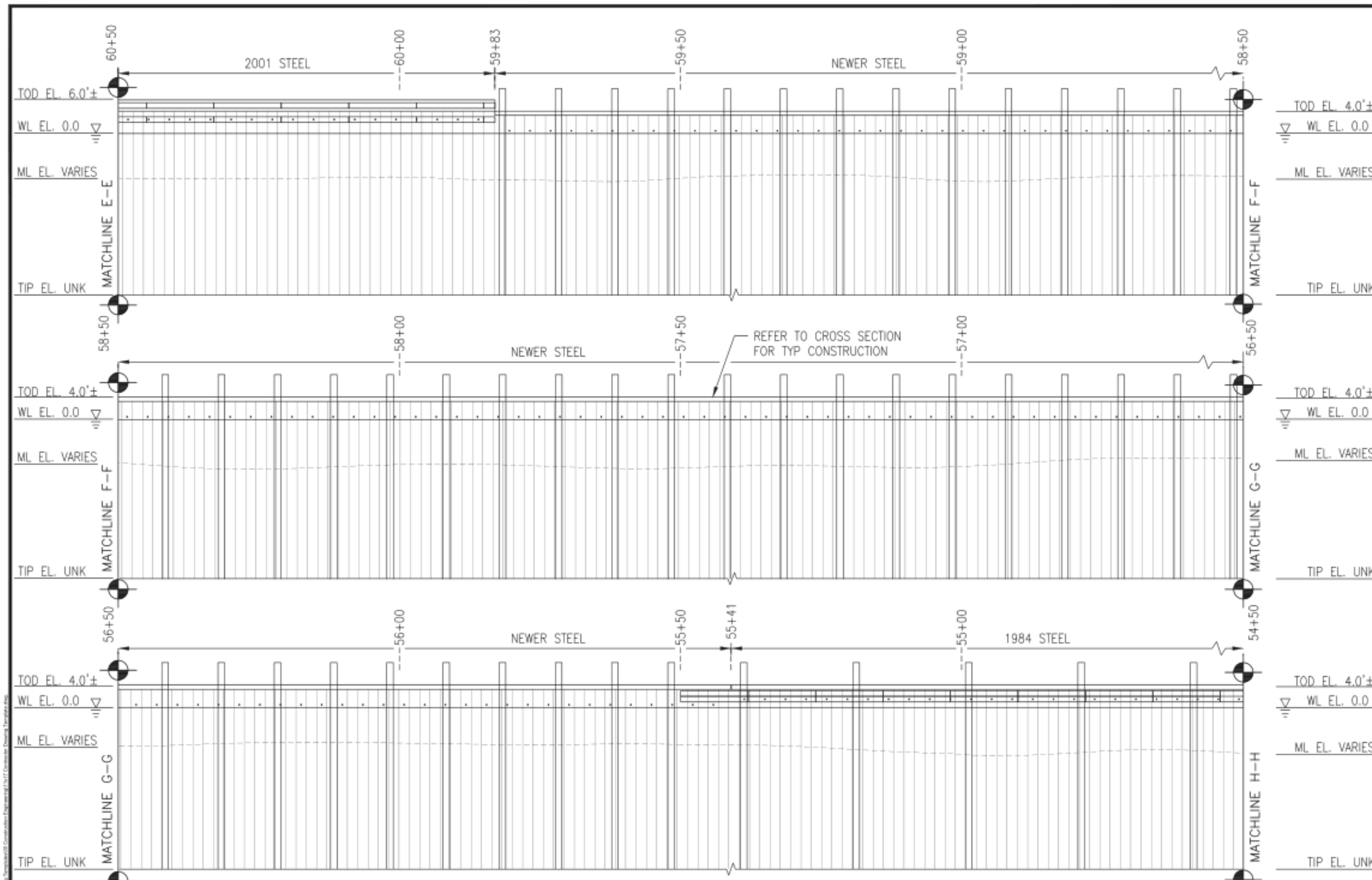
PALACIOS, TX

2022

designed by: DRS
checked by: CTC
approved by: MJS
QA/QC by: CTC
project no.: 38-13706.00
drawing no.: 001
date: APRIL 2022

FIGURE

12 OF 29



ELEVATIONS

SCALE: 3/4" = 1'

NOTE: MUDLINE SHOWN SCHEMATICALLY, REFER TO TABLES IN FIGURES 23–28 FOR RECORDED MEASUREMENTS FROM TOP OF PILE CAP TO MUDLINE.

COLLINS ENGINEERS

REV. NO.	DATE	REVISIONS DESCRIPTION
1		
2		
3		
4		
5		
6		
7		

REVISIONS

2022

WATERFRONT FACILITY ASSESSMENT

PORT OF PALACIOS

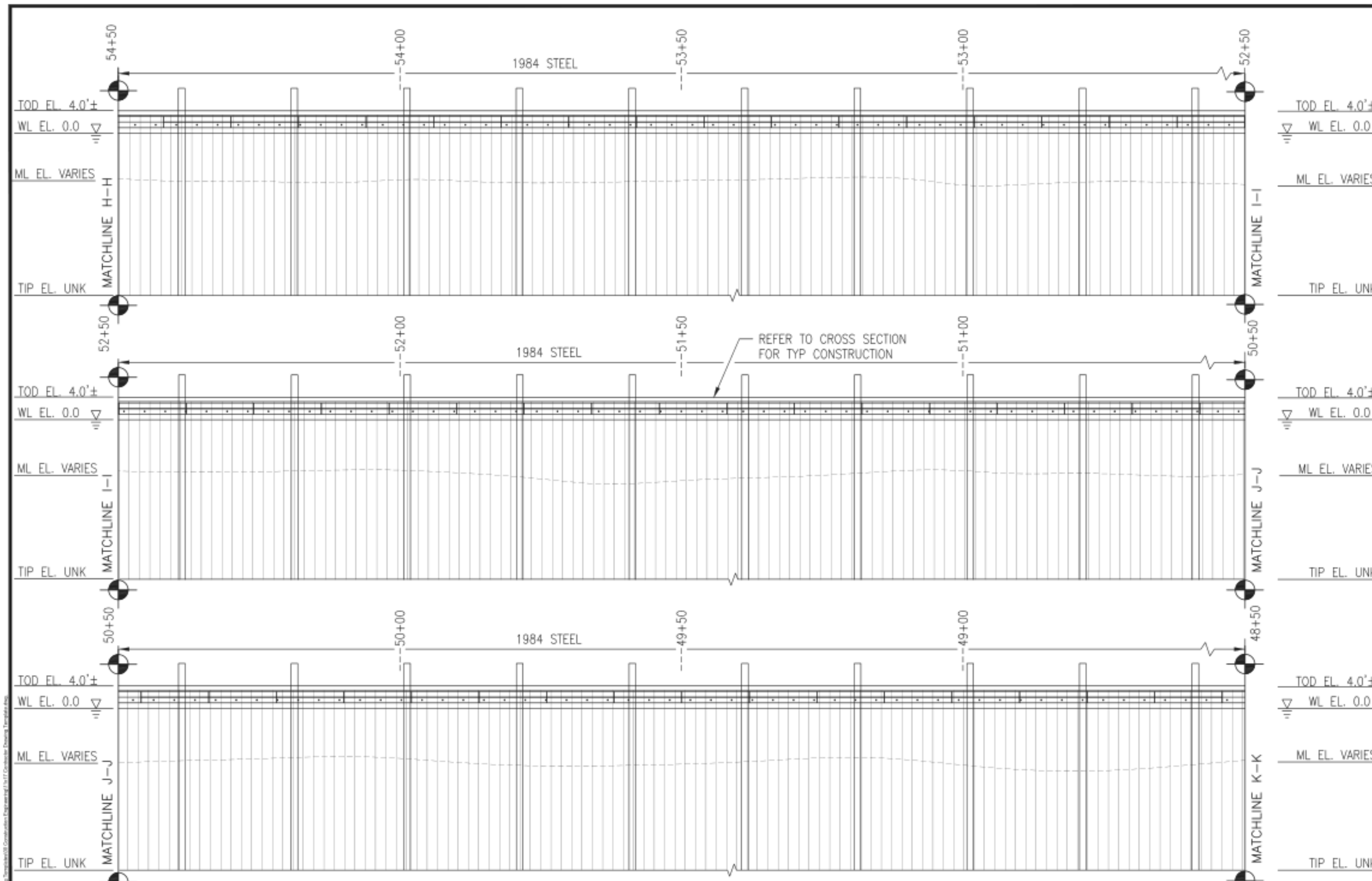
BULKHEAD ELEVATION

PALACIOS, TX

designed by: CTC
checked by: CTC
approved by: MJS
QA/QC by: CTC
project no.: 38-13706.00
drawing no.: 001
date: APRIL 2022

FIGURE

13 OF 29



ELEVATIONS

SCALE: 3/4" = 1'

NOTE: MUDLINE SHOWN SCHEMATICALLY, REFER TO TABLES IN FIGURES 23-28 FOR RECORDED MEASUREMENTS FROM TOP OF PILE CAP TO MUDLINE.

COLLINS ENGINEERS

REVISIONS

REV. NO.	DATE	REVISIONS DESCRIPTION
1		
2		
3		
4		
5		
6		
7		

WATERFRONT FACILITY ASSESSMENT

PORT OF PALACIOS

BULKHEAD ELEVATION

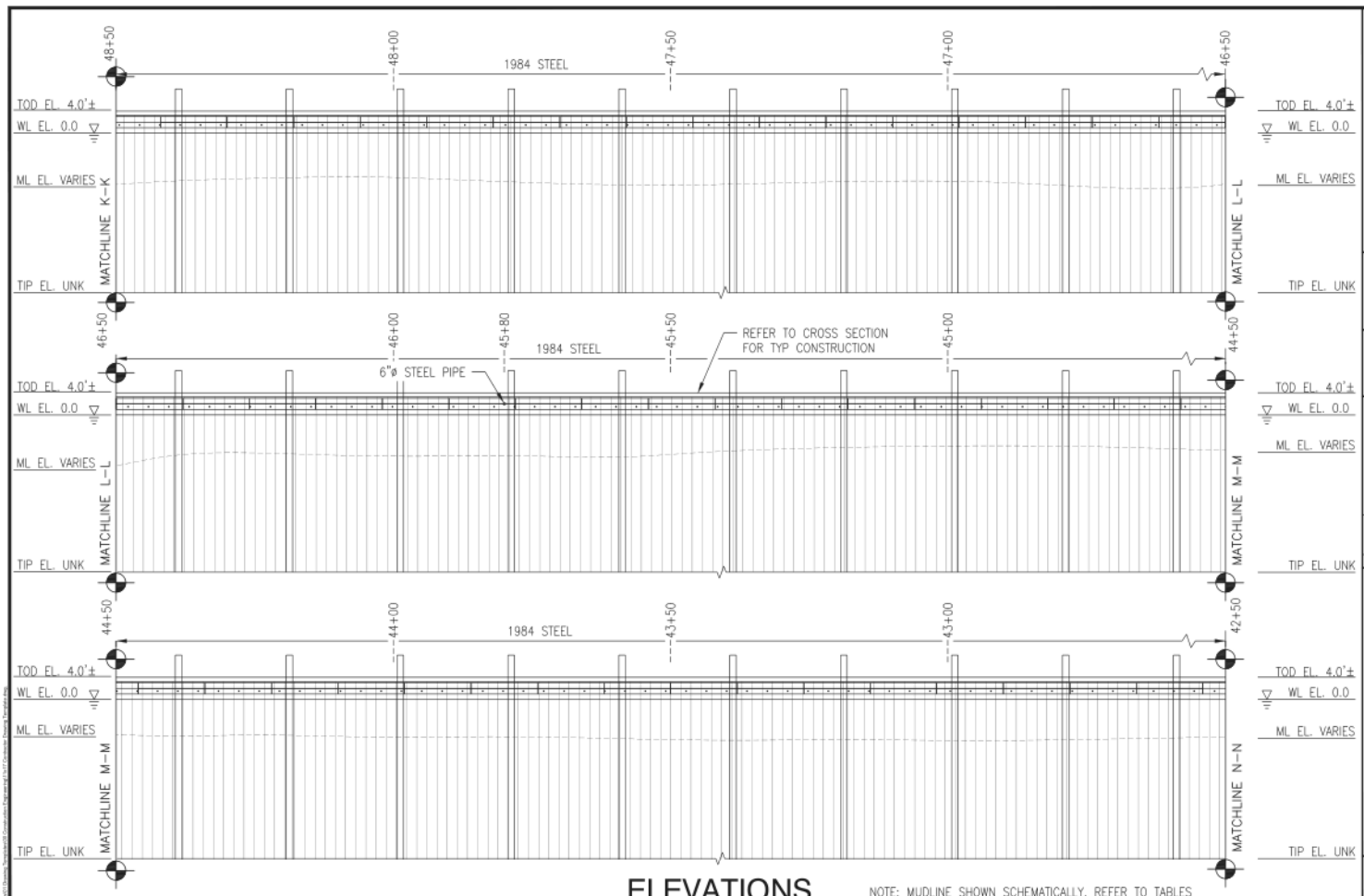
PALACIOS, TX

2022

designed by: DTG
checked by: CTC
approved by: MJS
QA/QC by: CTC
project no.: 38-13706.00
drawing no.: 001
date: APRIL 2022

FIGURE

14 OF 29



ELEVATIONS

SCALE: 3/4" = 1'

NOTE: MUDLINE SHOWN SCHEMATICALLY, REFER TO TABLES IN FIGURES 23–28 FOR RECORDED MEASUREMENTS FROM TOP OF PILE CAP TO MUDLINE.

COLLINS ENGINEERS

REVISIONS

NO.	DATE	REVISIONS DESCRIPTION
1		
2		
3		
4		
5		

WATERFRONT FACILITY ASSESSMENT

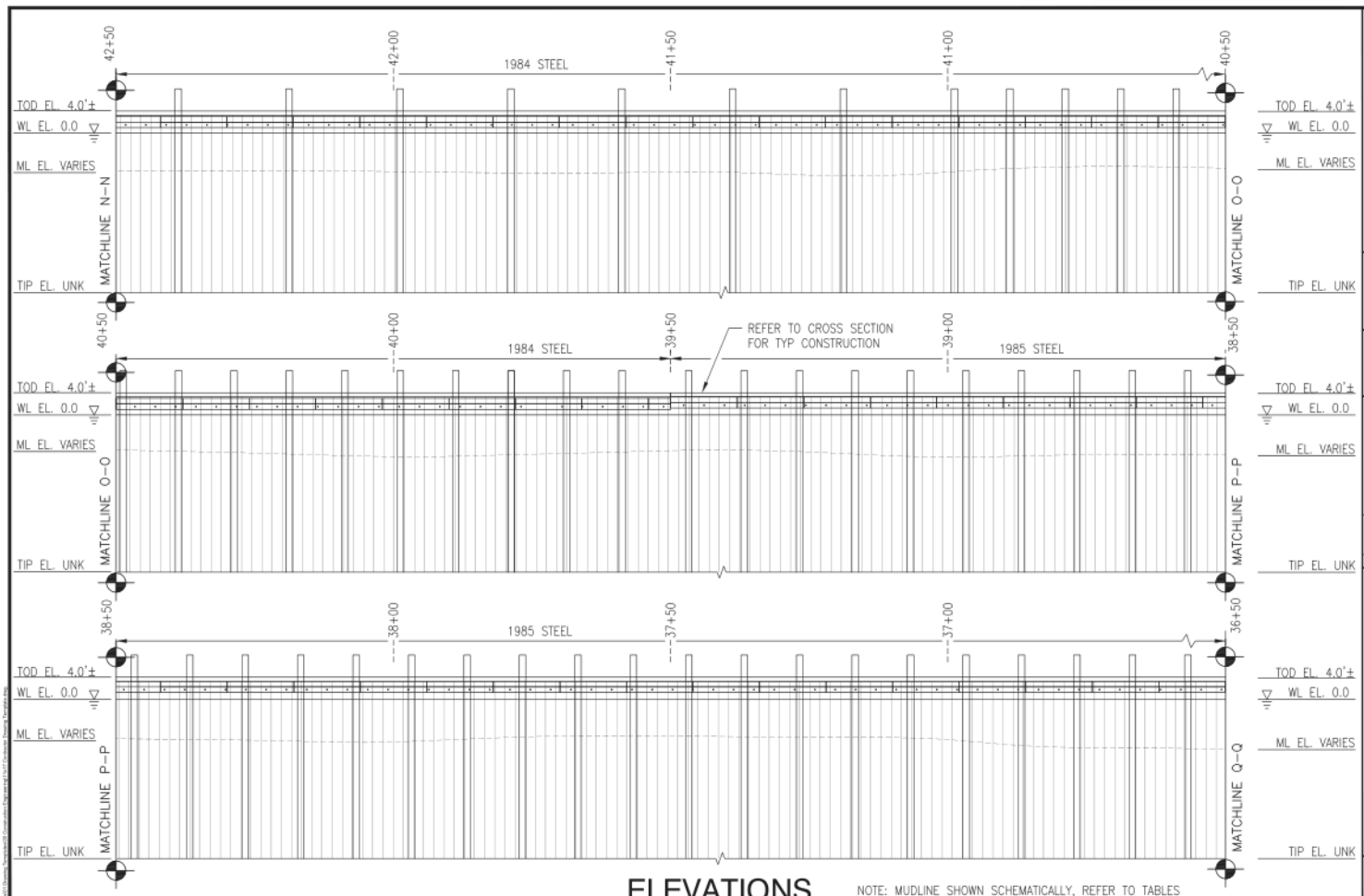
PORT OF PALACIOS
BULKHEAD ELEVATION

PALACIOS, TX

2022

designed by: MDF
checked by: CN
approved by: MDF
QA/QC by: CN
project no.: 38-13706.00
drawing no.: 007
date: APRIL 2022

FIGURE
15 OF 29



ELEVATIONS

SCALE: 3/4" = 1'

NOTE: MUDLINE SHOWN SCHEMATICALLY, REFER TO TABLES IN FIGURES 23-28 FOR RECORDED MEASUREMENTS FROM TOP OF PILE CAP TO MUDLINE.

COLLINS ENGINEERS

REVISIONS

NO.	DATE	REVISIONS DESCRIPTION
1		
2		
3		
4		
5		

WATERFRONT FACILITY ASSESSMENT

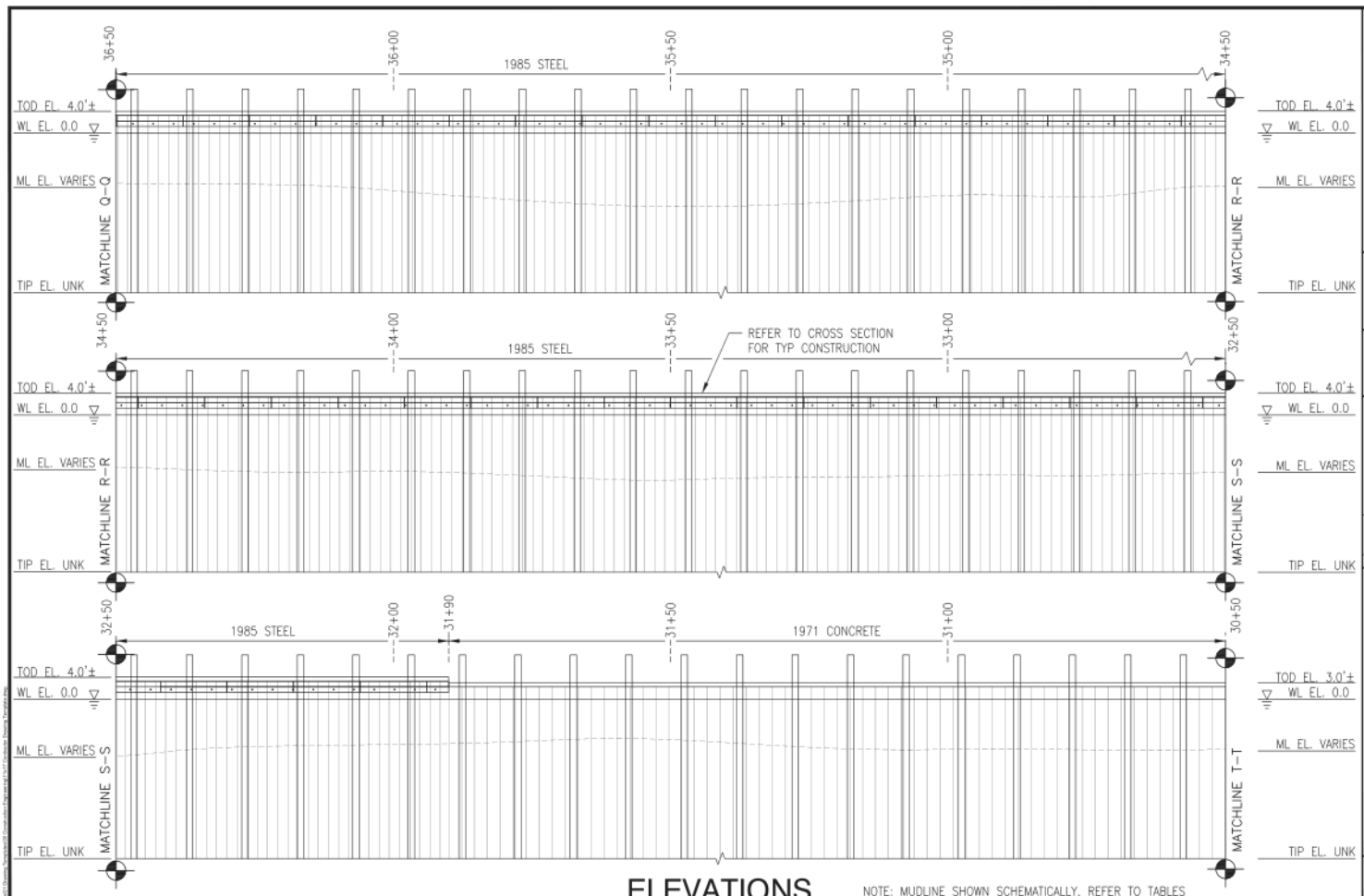
PORT OF PALACIOS
BULKHEAD ELEVATION

PALACIOS, TX

2022

designed by: MDP
checked by: CN
approved by: MDP
QA/QC by: CN
project no.: 38-13706.00
drawing no.: 007
date: APRIL 2022

FIGURE
16 OF 29



ELEVATIONS

SCALE: 3/4" = 1'

NOTE: MUDLINE SHOWN SCHEMATICALLY, REFER TO TABLES IN FIGURES 23-28 FOR RECORDED MEASUREMENTS FROM TOP OF PILE CAP TO MUDLINE.

COLLINS ENGINEERS

REVISIONS

NO.	DATE	REVISIONS DESCRIPTION
1		
2		
3		
4		
5		

WATERFRONT FACILITY ASSESSMENT

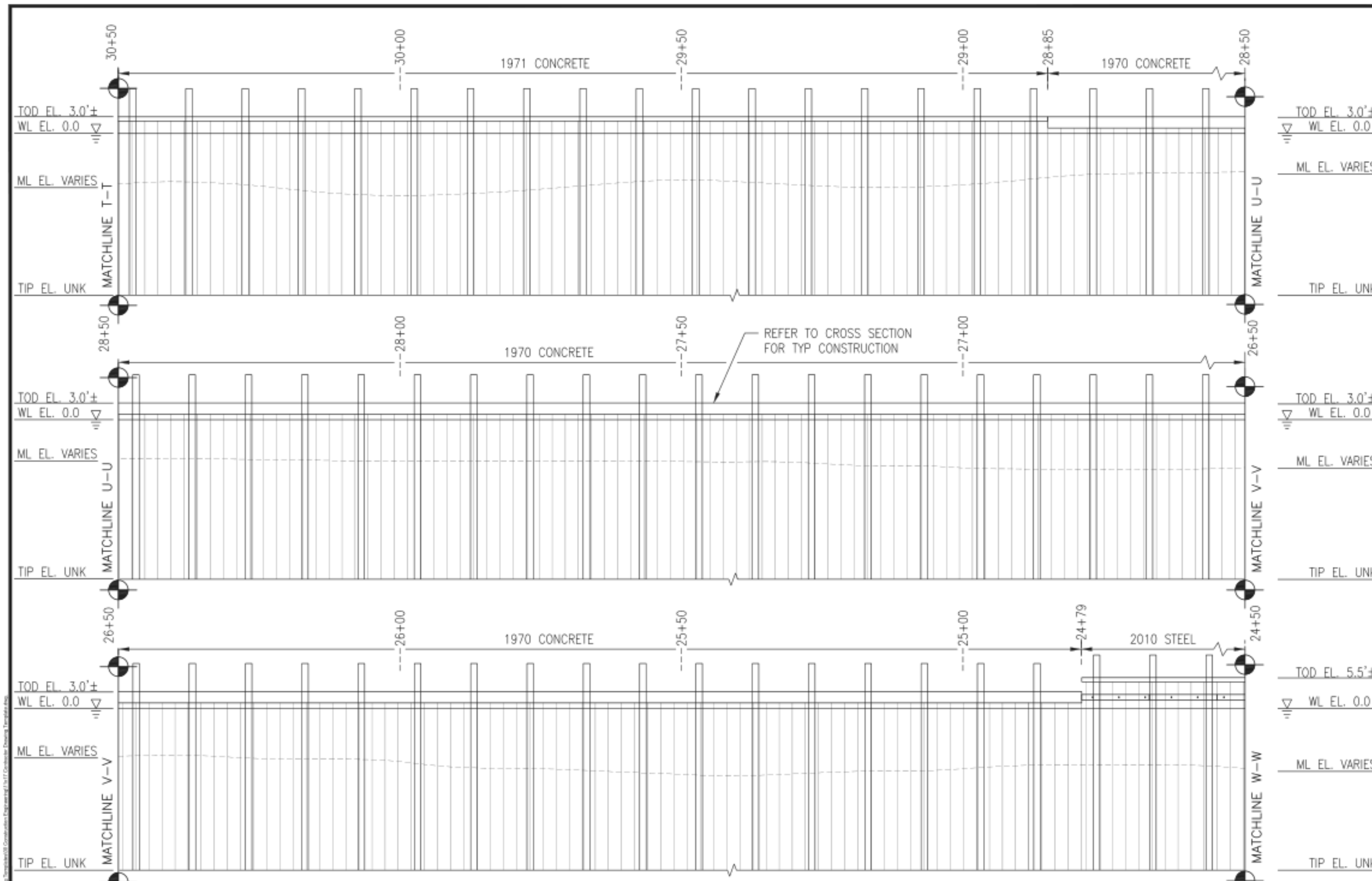
PORT OF PALACIOS
BULKHEAD ELEVATION

PALACIOS, TX

2022

designed by: MDF
checked by: CN
approved by: MDF
QA/QC by: CN
project no.: 38-13706.00
drawing no.: 007
date: APRIL 2022

FIGURE
17 OF 29



ELEVATIONS

SCALE: 3/4" = 1'

NOTE: MUDLINE SHOWN SCHEMATICALLY, REFER TO TABLES IN FIGURES 23–28 FOR RECORDED MEASUREMENTS FROM TOP OF PILE CAP TO MUDLINE.

COLLINS ENGINEERS INC

REV. NO.	DATE	REVISIONS DESCRIPTION
1		
2		
3		
4		
5		
6		
7		

REVISIONS

WATERFRONT FACILITY ASSESSMENT

PORT OF PALACIOS

BULKHEAD ELEVATION

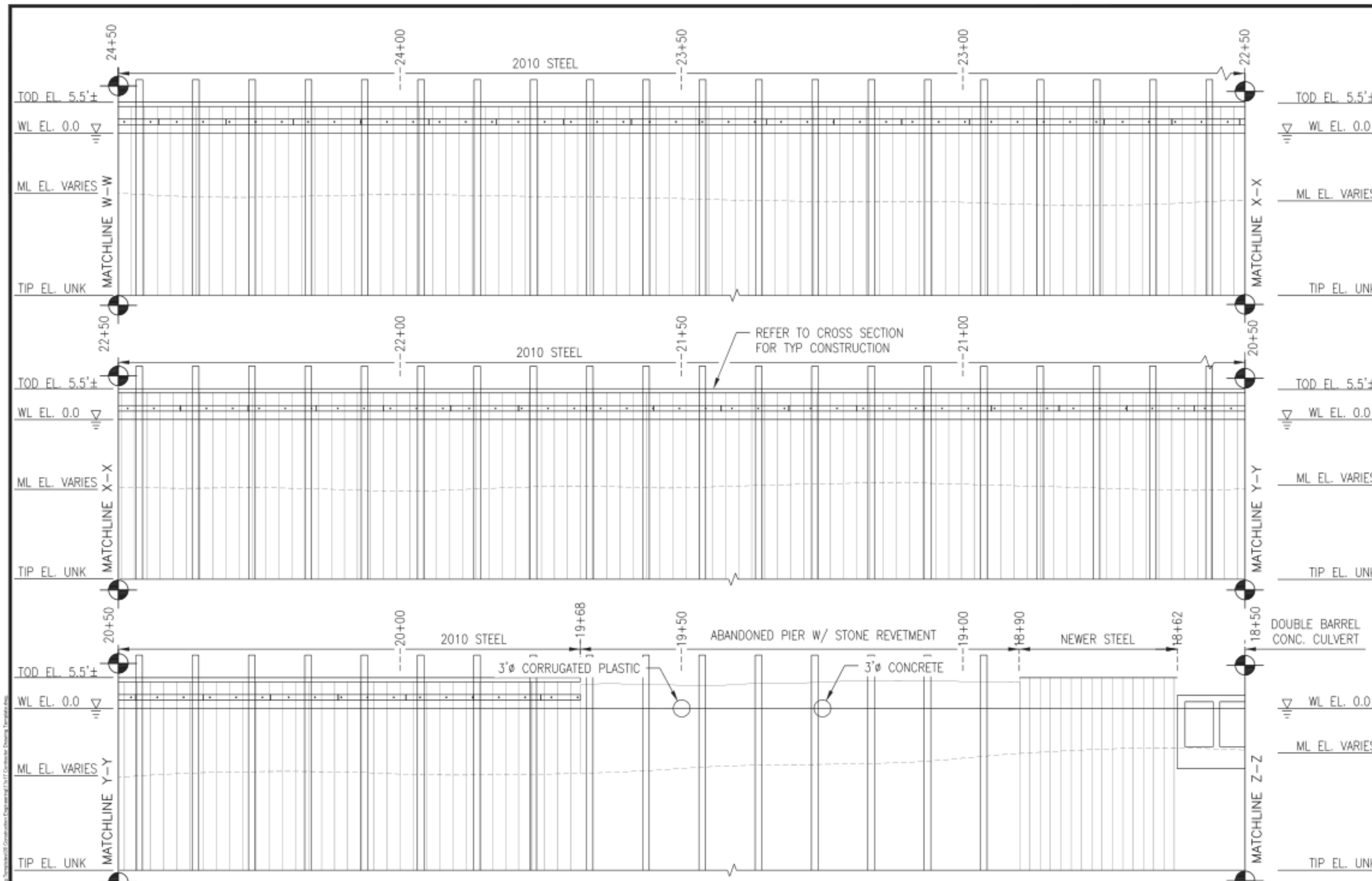
PALACIOS, TX

2022

designed by: DSL
checked by: CTC
approved by: MJS
QA/QC by: CTC
project no.: 38-13706.00
drawing no.: 001
date: APRIL 2022

FIGURE

18 OF 29



ELEVATIONS

SCALE: 3/4" = 1'

NOTE: MUDLINE SHOWN SCHEMATICALLY, REFER TO TABLES IN FIGURES 23–28 FOR RECORDED MEASUREMENTS FROM TOP OF PILE CAP TO MUDLINE.

COLLINS ENGINEERS INC

REVISIONS

WATERFRONT FACILITY ASSESSMENT

PORT OF PALACIOS

BULKHEAD ELEVATION

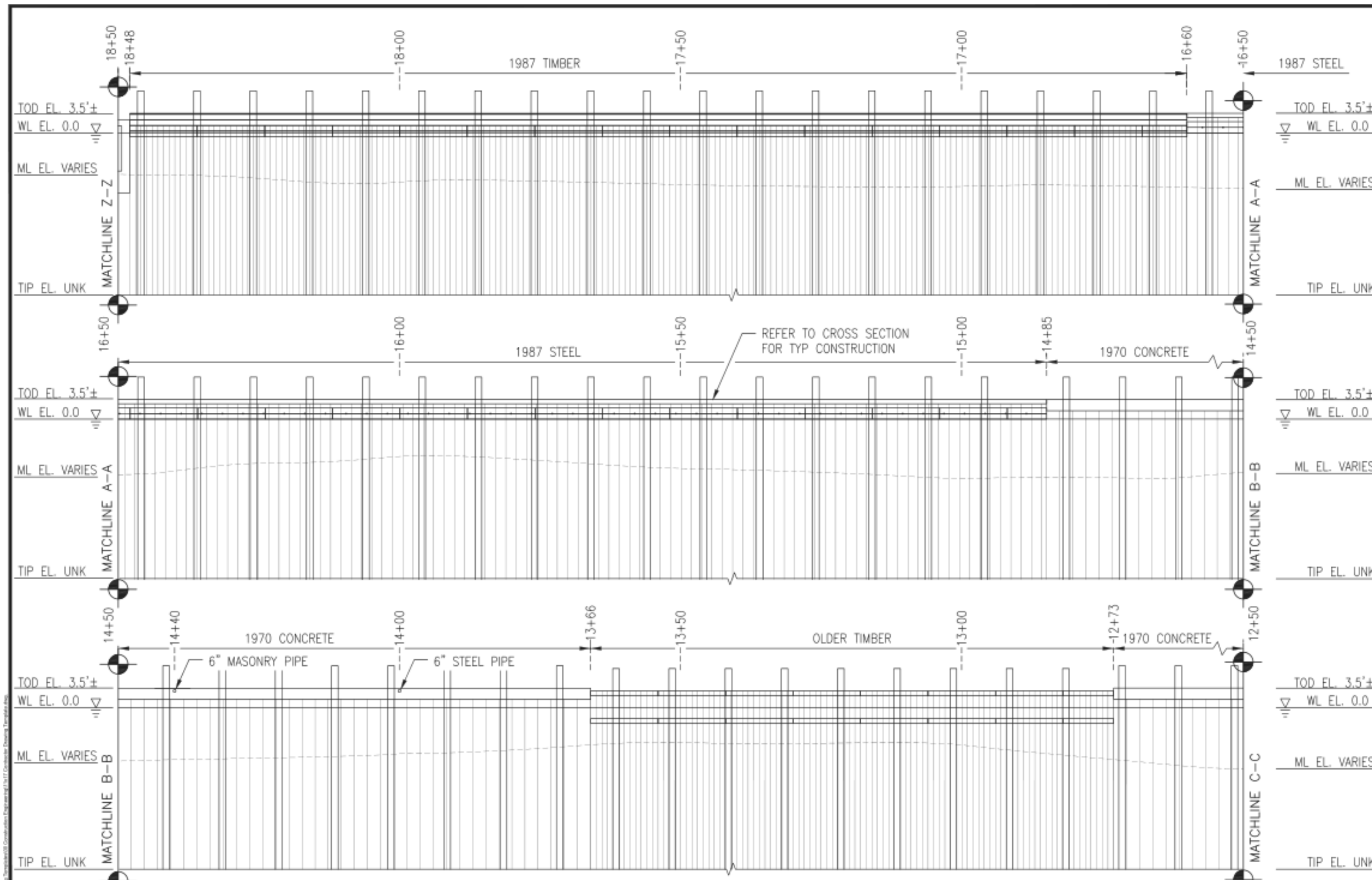
PALACIOS, TX

2022

designed by: DSG
checked by: CTC
approved by: MJS
QA/QC by: CTC
project no.: 38-13706.00
drawing no.: 001
date: APRIL 2022

FIGURE

19 OF 29



ELEVATIONS

SCALE: 3/4" = 1'

NOTE: MUDLINE SHOWN SCHEMATICALLY, REFER TO TABLES IN FIGURES 23–28 FOR RECORDED MEASUREMENTS FROM TOP OF PILE CAP TO MUDLINE.

COLLINS ENGINEERS INC

REVISIONS

REV. NO.	DATE	REVISIONS DESCRIPTION
1		
2		
3		
4		
5		
6		
7		

WATERFRONT FACILITY ASSESSMENT

PORT OF PALACIOS

BULKHEAD ELEVATION

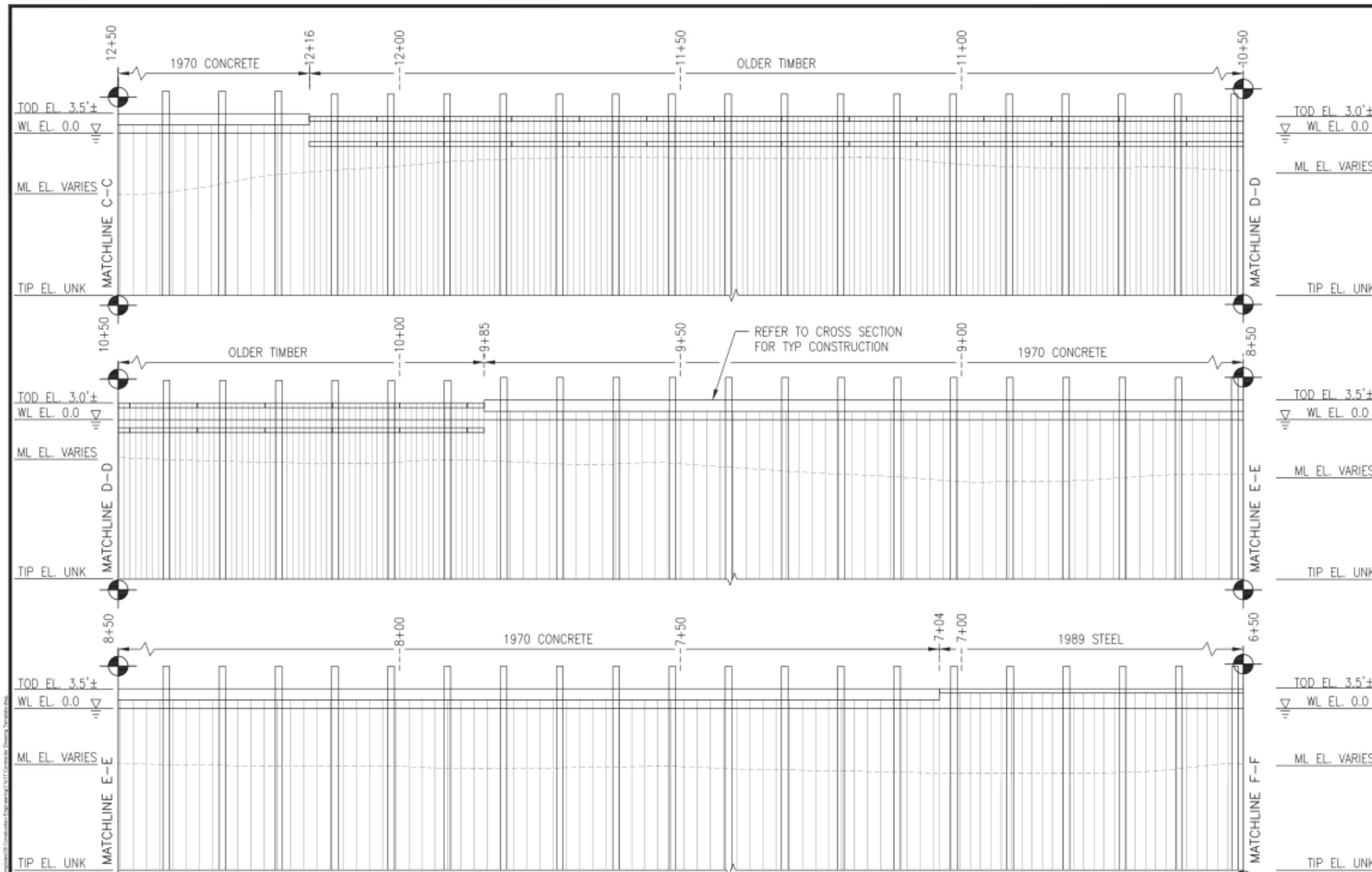
PALACIOS, TX

2022

designed by: CTC
checked by: CTC
approved by: M/S
QA/QC by: CTC
project no.: 38-13706.00
drawing no.: 001
date: APRIL 2022

FIGURE

20 OF 29



ELEVATIONS

SCALE: 3/4" = 1'

NOTE: MUDLINE SHOWN SCHEMATICALLY, REFER TO TABLES IN FIGURES 23–28 FOR RECORDED MEASUREMENTS FROM TOP OF PILE CAP TO MUDLINE.

COLLINS ENGINEERS INC

REVISIONS

WATERFRONT FACILITY ASSESSMENT

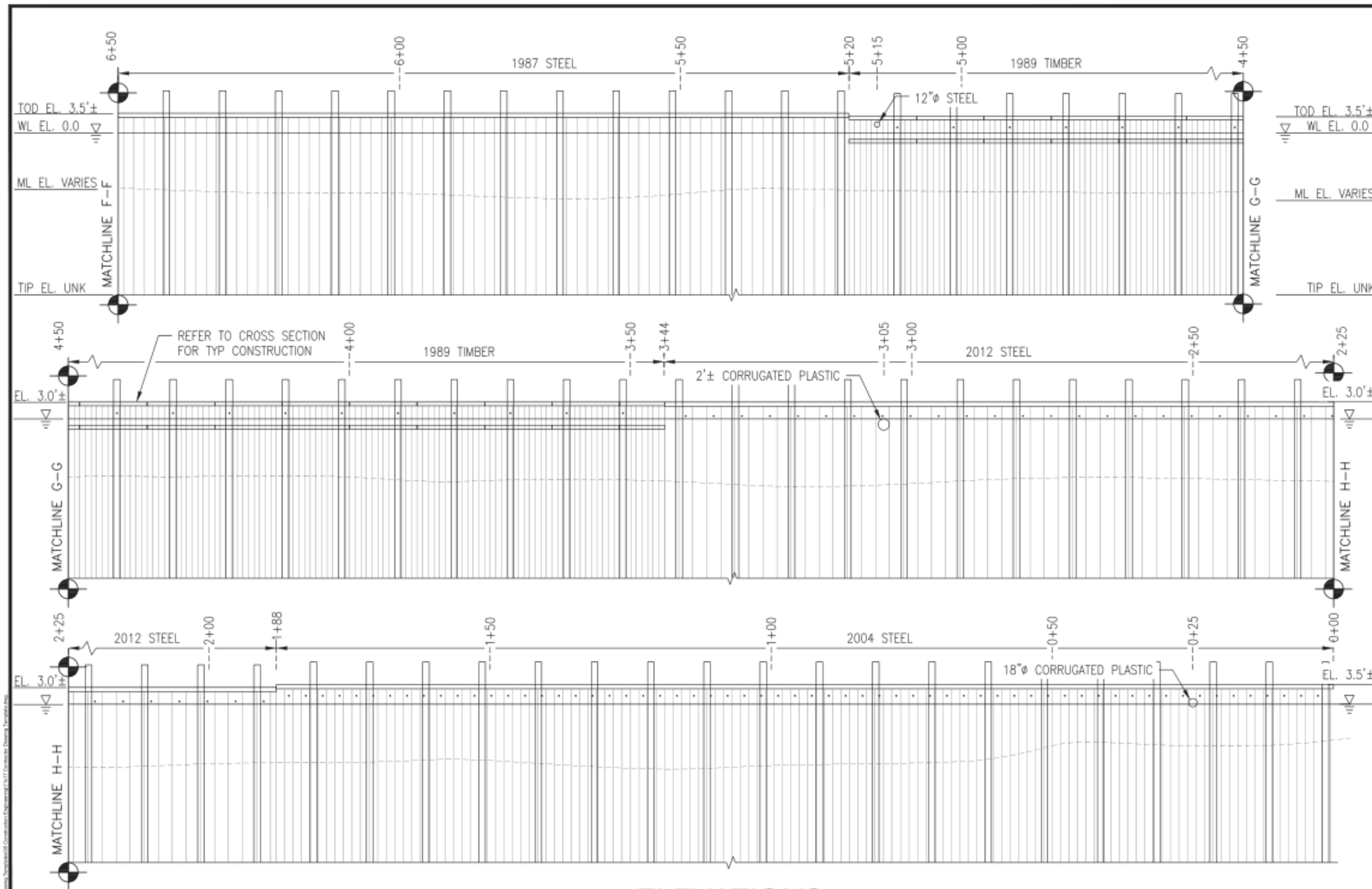
PORT OF PALACIOS
BULKHEAD ELEVATION

PALACIOS, TX

2022

designed by: CTC
checked by: CTC
approved by: MJS
DA/DC by: CTC
project no.: 38-13706.00
drawing no.: 001
date: APRIL 2022

FIGURE
21 OF 29



ELEVATIONS

SCALE: 3/4" = 1'

NOTE: MUDLINE SHOWN SCHEMATICALLY, REFER TO TABLES IN FIGURES 23–28 FOR RECORDED MEASUREMENTS FROM TOP OF PILE CAP TO MUDLINE.

COLLINS ENGINEERS INC

REV. NO.	DATE	REVISIONS DESCRIPTION
1		
2		
3		
4		
5		
6		
7		

REVISIONS

WATERFRONT FACILITY ASSESSMENT

PORT OF PALACIOS

BULKHEAD ELEVATION

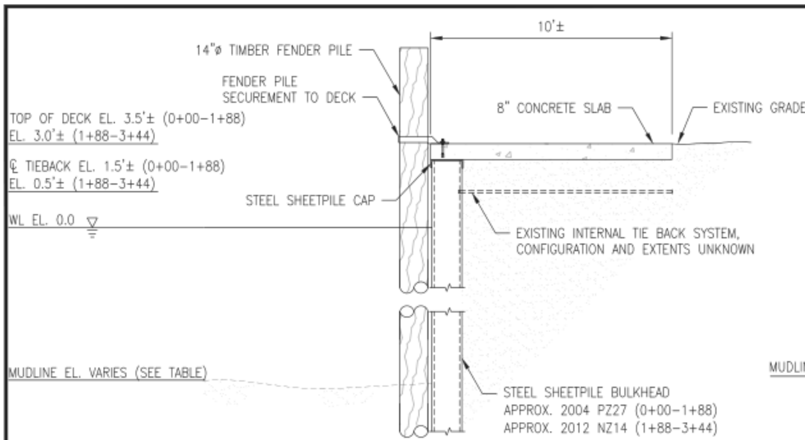
PALACIOS, TX

2022

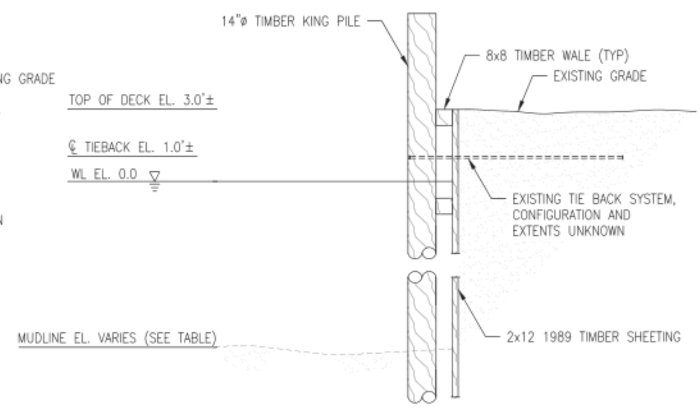
designed by: CTC
checked by: CTC
approved by: MJS
QA/QC by: CTC
project no.: 38-13706.00
drawing no.: 001
date: APRIL 2022

FIGURE

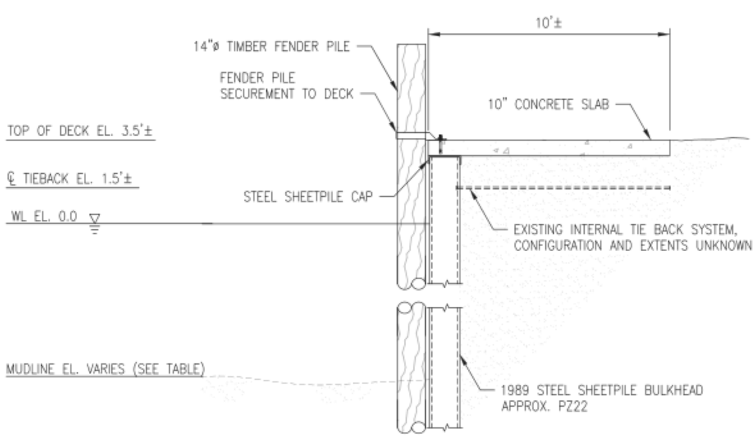
22 OF 29



STA 0+00 - 3+44



STA 3+44 - 5+20



STA 5+20 - 7+04

FIELD MEASUREMENTS		
STATION	MUDLINE EL. (FT)*	MUDLINE PROBE (FT)
0+00	−8.5	0.5
0+50	−10.5	0.5
1+00	−11.5	2
1+50	−12	1.5
2+00	−13.5	0.5
2+50	−13.5	0.5
3+00	−12.5	0.5
3+50	−14.5	0.5
4+00	−14.5	0.5
4+50	−16	0
5+00	−14	0
5+50	−15	0.5
6+00	−13	0
6+50	−12	1
7+00	−13.5	1
7+50	−11.5	0.5

* EL. REFERENCE TO TOP OF CAP OR SHEET

COLLINS ENGINEERS INC

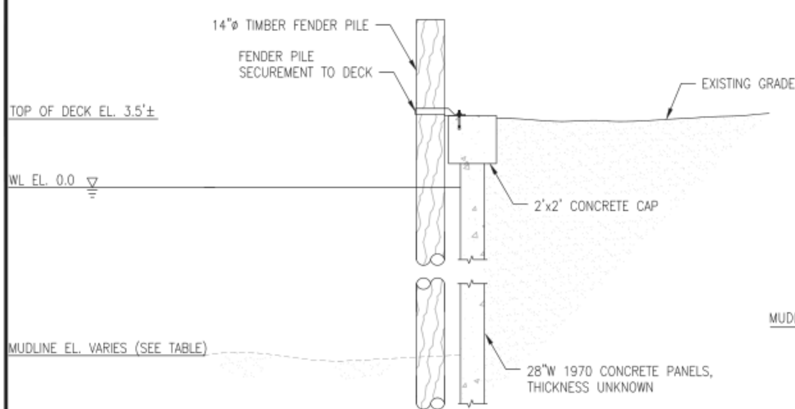
REV. NO.	DATE	REVISIONS DESCRIPTION
1		
2		
3		
4		
5		
6		
7		

REVISIONS

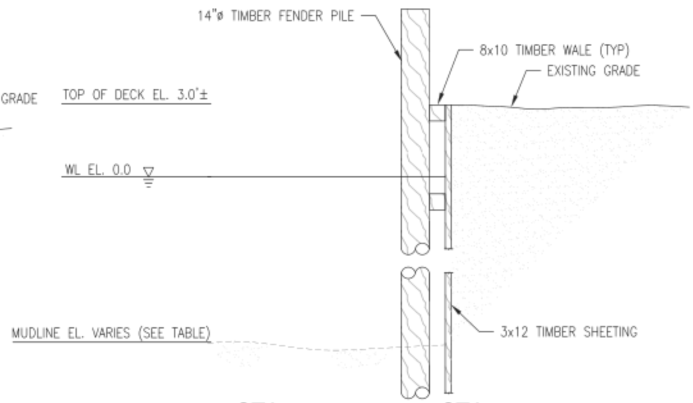
WATERFRONT FACILITY ASSESSMENT
PORT OF PALACIOS
SCHEMATIC CROSS SECTIONS
PALACIOS, TX
2022

designed by: DTG
checked by: CTC
approved by: MJS
QA/QC by: CTC
project no.: 38-13706.00
drawing no.: 001
date: APRIL 2022

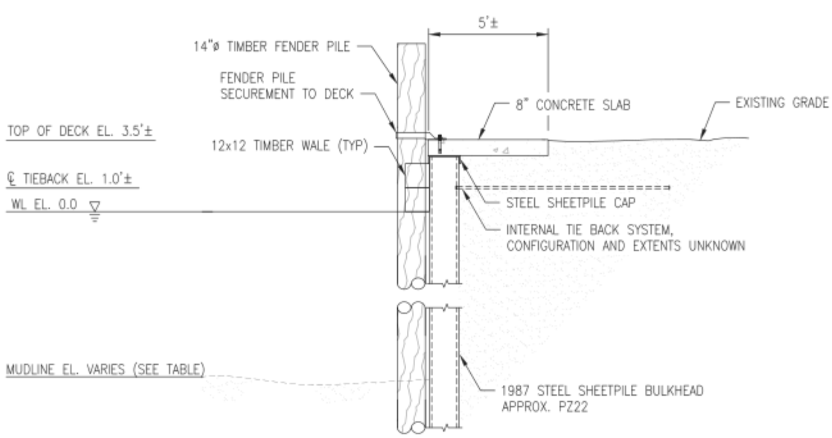
FIGURE
23 OF 29



STA 7+04-9+85; STA 12+16-12+73; STA 13+66-14+85



STA 9+85-12+16; STA 12+73-13+66



STA 14+85-16+60

FIELD MEASUREMENTS		
STATION	MUDLINE EL. (FT)*	MUDLINE PROBE (FT)
7+00	−13.5	1
7+50	−11.5	0.5
8+00	−14.5	1
8+50	−13	1
9+00	−10	0
9+50	−9.5	0
10+00	−6	0
10+50	−4.5	0
11+50	−5	0
12+00	−7	0.5
12+50	−12	0.5
13+00	−5	0.5
13+50	−5.5	0
14+00	−9	0
14+50	−12.5	0.5
15+00	−13	0
15+50	−15	0
16+00	−17	0
16+50	−16	0
17+00	−11	1

* EL. REFERENCE TO TOP OF CAP OR SHEET

COLLINS ENGINEERS

REVISIONS

WATERFRONT FACILITY ASSESSMENT

PORT OF PALACIOS

SCHEMATIC CROSS SECTIONS

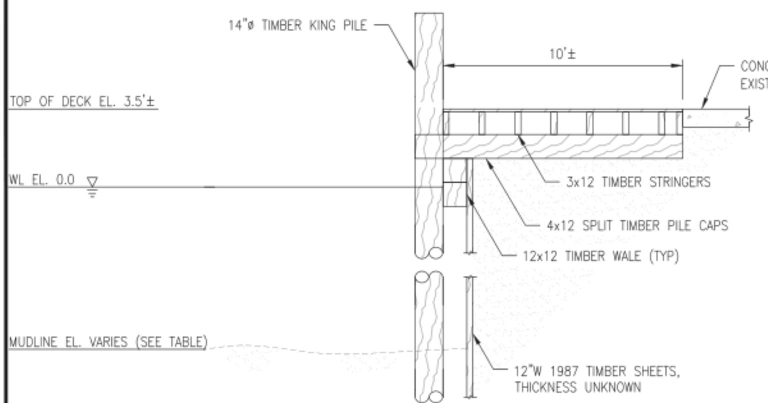
PALACIOS, TX

2022

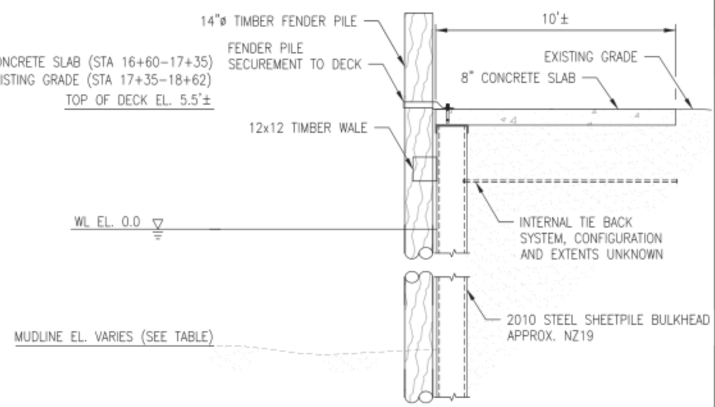
date: APRIL 2022

FIGURE

24 OF 29



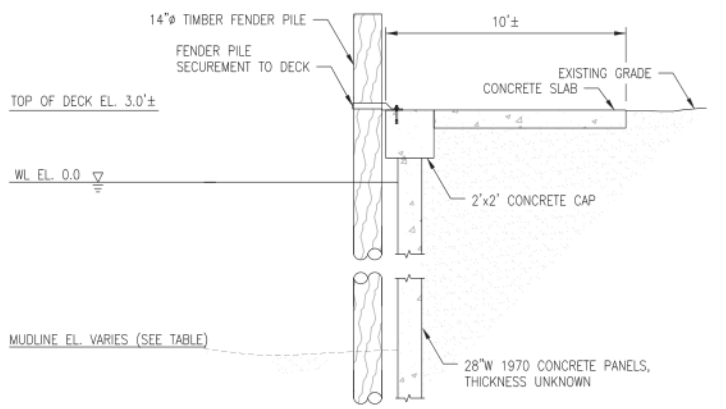
STA 16+60-18+48



STA 19+68-24+79

NOTES:

1. DOUBLE BARREL CONCRETE CULVERT AT STA 18+48–18+62.
2. NEW STEEL SHEETPILE BULKHEAD AT STA 18+62–18+90.
3. ABANDONED STRUCTURE WITH ASSOCIATED REMNANT TIMBER FRAMING AND RIP RAP AT STA 18+90–19+68.



STA 24+79-28+85

FIELD MEASUREMENTS		
STATION	MUDLINE EL. (FT)*	MUDLINE PROBE (FT)
16+50	16	0
17+00	11	1
17+50	9.5	0
18+00	8	1
18+50	5.5	0.5
20+00	8	0.5
20+50	11.5	0.5
21+00	15	1
21+50	16	3
22+00	16.5	2.5
22+50	19.5	2
23+00	19	2

FIELD MEASUREMENTS, CONT.		
STATION	MUDLINE EL. (FT)*	MUDLINE PROBE (FT)
23+50	19	1.5
24+00	18.5	0.5
24+50	15	0
25+00	13	0.5
25+50	12	0
26+00	11	0.5
26+50	11	0
27+00	13	1
27+50	15	0.5
28+00	14.5	1
28+50	12	3
29+00	12	2

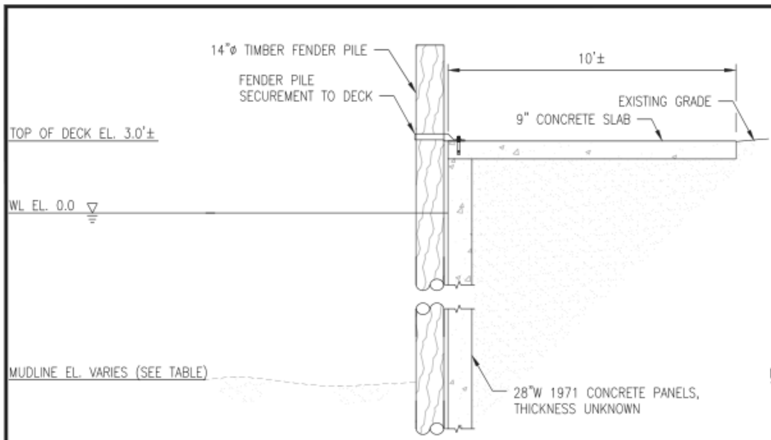
* EL. REFERENCE TO TOP OF CAP OR SHEET

COLLINS ENGINEERS

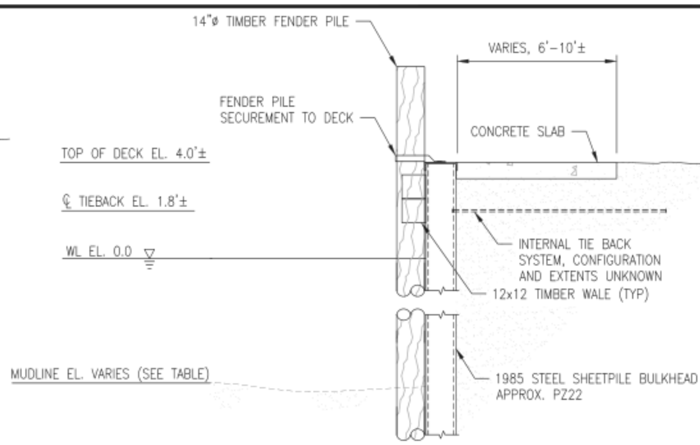
REVISIONS

WATERFRONT FACILITY ASSESSMENT
PORT OF PALACIOS
SCHEMATIC CROSS SECTIONS
PALACIOS, TX
2022

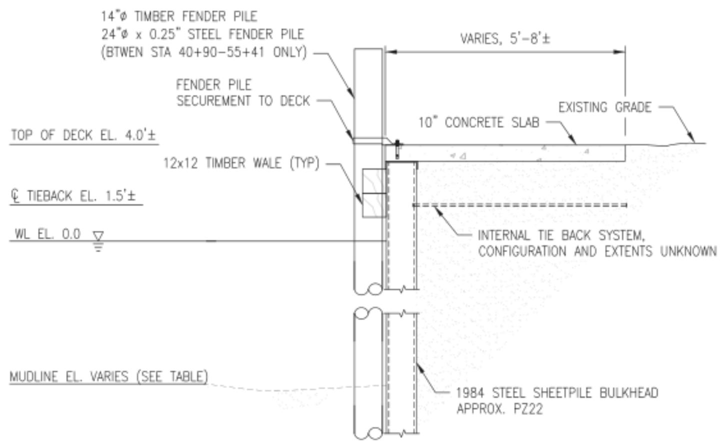
FIGURE
25 OF 29



STA 28+85-31+90



STA 31+90-39+50



STA 39+50-55+41

FIELD MEASUREMENTS		
STATION	MUDLINE EL. (FT)*	MUDLINE PROBE (FT)
28+50	−12	3
29+00	−12	2
29+50	−14.5	1
30+00	−15	1
30+50	−15	1
31+00	−16	1.5
31+50	−14	0.5
32+00	−14.5	0.5
32+50	−15.5	1
33+00	−16.5	0
33+50	−17.5	0
34+00	−17	1
34+50	−16.5	0
35+00	−17	1
35+50	−17.5	1
36+00	−19	0
36+50	−15	1.5
37+00	−15	1.5

FIELD MEASUREMENTS, CONT.		
STATION	MUDLINE EL. (FT)*	MUDLINE PROBE (FT)
37+50	−14.5	0
38+00	−14	1
38+50	−15.5	0
39+00	−15	0
39+50	−14.5	0
40+00	−15	2
40+50	−15	1
41+00	−15	1.5
41+50	−13.5	0.5
42+00	−14	1
42+50	−14	2
43+00	−15	2.5
43+50	−14.5	0
44+00	−14.5	1
44+50	−15	1
45+00	−15	2
45+50	−13	2.5
46+00	−13.5	2

FIELD MEASUREMENTS, CONT.		
STATION	MUDLINE EL. (FT)*	MUDLINE PROBE (FT)
46+50	−15	2
47+00	−17	1
47+50	−16.5	1
48+00	−17	1
48+50	−18	2
49+00	−17	0
49+50	−17.5	1.5
50+00	−17	1
50+50	−17	3
51+00	−17.5	3
51+50	−16.5	1.5
52+00	−18.5	1.5
52+50	−15	1
53+00	−16	0.5
53+50	−15.5	2.5
54+00	−15	1
54+50	−13.5	0.5
55+00	−12	0

* EL. REFERENCE TO TOP OF CAP OR SHEET

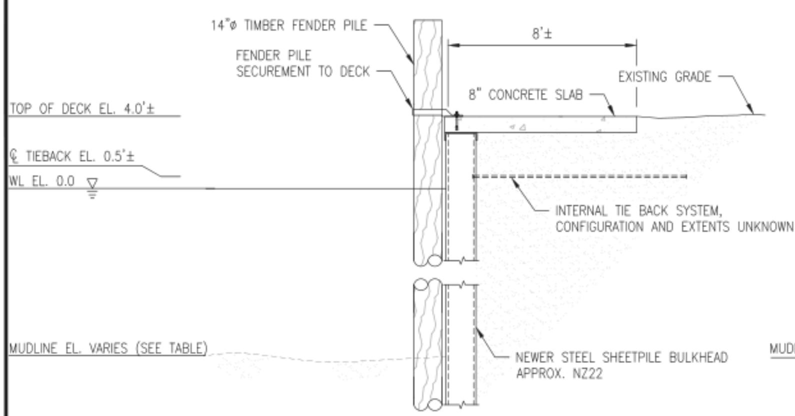
COLLINS ENGINEERS

REVISIONS

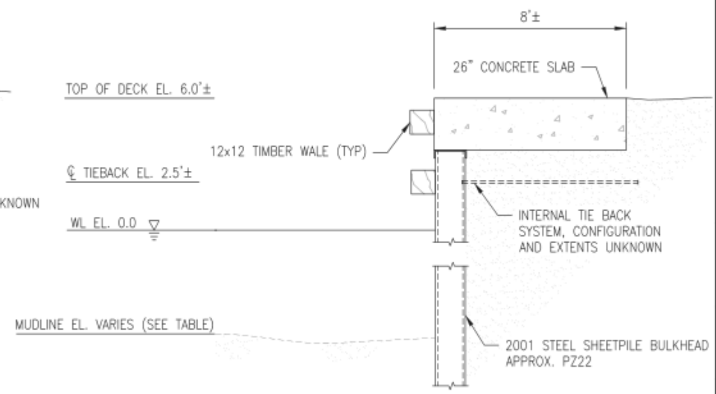
WATERFRONT FACILITY ASSESSMENT
PORT OF PALACIOS
SCHEMATIC CROSS SECTIONS
PALACIOS, TX
2022

date: APRIL 2022

FIGURE
26 OF 29



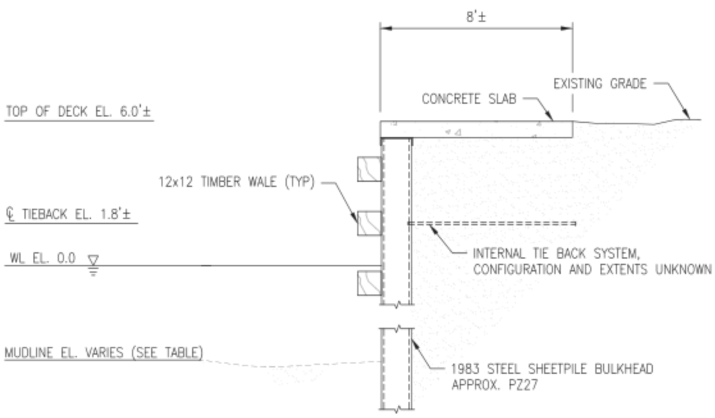
STA 55+41-59+83



STA 59+83-62+85

NOTES:

1. BULKHEAD BURIED AND SUBSEQUENTLY CONCEALED FROM VIEW BETWEEN STA 61+80 AND 60+88.



STA 62+85-70+00

FIELD MEASUREMENTS		
STATION	MUDLINE EL. (FT)*	MUDLINE PROBE (FT)
55+50	−12	0
56+00	−13.5	1
56+50	−12	1.5
57+00	−15	0.5
57+50	−16.5	1
58+00	−15	1.5
58+50	−14	1.5
59+00	−15	2
59+50	−14	2.5
60+00	−14	1.5
60+50	−16	5
61+00	0	0
61+50	0	0
62+00	−17	2
62+50	−16	1.5

FIELD MEASUREMENTS, CONT.		
STATION	MUDLINE EL. (FT)*	MUDLINE PROBE (FT)
63+00	−15.5	0
63+50	−15	0.5
64+00	−17.5	3.5
64+50	−18	4
65+00	−19.5	0
65+50	−19.5	2.5
66+00	−18	2
66+50	−19	1.5
67+00	−20	2
67+50	−16.5	1
68+00	−17.5	2.5
68+50	−17	3
69+00	−16	0.5
69+50	−16.5	5
70+00	−18	0

* EL. REFERENCE TO TOP OF CAP OR SHEET

COLLINS ENGINEERS INC

REV. NO.	DATE	REVISIONS DESCRIPTION
1		
2		
3		
4		
5		
6		
7		

REVISIONS

WATERFRONT FACILITY ASSESSMENT

PORT OF PALACIOS

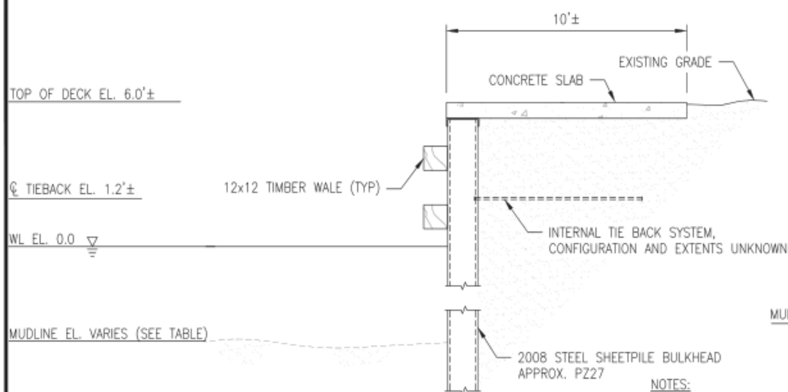
SCHEMATIC CROSS SECTIONS

2022

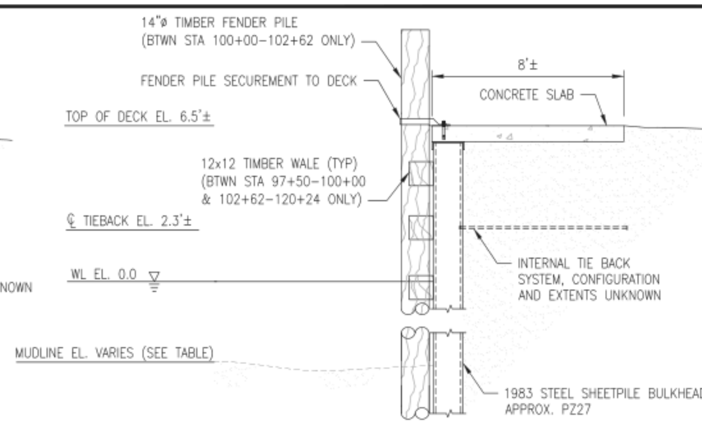
PALACIOS, TX

designed by: DTG
checked by: CTC
approved by: MJS
QA/QC by: CTC
project no.: 38-13706.00
drawing no.: 001
date: APRIL 2022

FIGURE



STA 70+00-97+50



STA 97+50-120+50

NOTES:

1. BULKHEAD RETURN AT STA 120+24, TERMINATES AT STA 120+50.

FIELD MEASUREMENTS		
STATION	MUDLINE EL. (FT)*	MUDLINE PROBE (FT)
70+00	−18	0
70+50	−17.5	0
71+00	−19	0.5
71+50	−19	1
72+00	−18	1
72+50	−18.5	0.5
73+00	−18	2
73+50	−19.5	1
74+00	−19.5	1
74+50	−18.5	1.5
75+00	−15.5	0
75+50	−17.5	1
76+00	−18	2
76+50	−20.5	0
77+00	−18.5	1.5
77+50	−21	3
78+00	−18	1.5
78+50	−16.5	1

FIELD MEASUREMENTS, CONT.		
STATION	MUDLINE EL. (FT)*	MUDLINE PROBE (FT)
79+00	−17	2.5
79+50	−20	1
80+00	−21.5	2.5
80+50	−19.5	0
81+00	−22	2
81+50	−18.5	2
82+00	−19	1
82+50	−19.5	0.5
83+00	−19	0.5
83+50	−22	1
84+00	−17.5	0.5
84+50	−19	1
85+00	−18	0
85+50	−18	0.5
86+00	−19	0.5
86+50	−18.5	1.5
87+00	−23	1
87+50	−23	0

FIELD MEASUREMENTS, CONT.		
STATION	MUDLINE EL. (FT)*	MUDLINE PROBE (FT)
88+00	−21.5	1
88+50	−21	1
89+00	−20	0.5
89+50	−19	0.5
90+00	−18.5	1.5
90+50	−22	0
91+00	−19.5	5
91+50	−20	0.5
92+00	−19.5	0.5
92+50	−19.5	0
93+00	−20.5	0
93+50	−21.5	0
94+00	−21	0
94+50	−20.5	0
95+00	−21.5	0.5
95+50	−20.5	0
96+00	−20	0
96+50	−20.5	0

FIELD MEASUREMENTS, CONT.		
STATION	MUDLINE EL. (FT)*	MUDLINE PROBE (FT)
97+00	−19.5	0
97+50	−20.5	1
98+00	−21	1
98+50	−22	1
99+00	−20	2
99+50	−19.5	2
100+00	−21.5	2
100+50	−20.5	1
101+00	−23	0.5
101+50	−24	5
102+00	−22.5	1
102+50	−19	1
103+00	−16.5	0.5
103+50	−18	0
104+00	−18	1
104+50	−17.5	1.5
105+00	−15.5	1
105+50	−12	1

FIELD MEASUREMENTS, CONT.		
STATION	MUDLINE EL. (FT)*	MUDLINE PROBE (FT)
106+00	−14	1
106+50	−14.5	0.5
107+00	−18	1
107+50	−20	2
108+00	−22	1.5
108+50	−21.5	1
109+00	−21	1
109+50	−22	1
110+00	−22	1
110+50	−22.5	1
111+00	−20	1.5
111+50	−20.5	0.5
112+00	−22	0.5
112+50	−19.5	0.5
113+00	−18	1
113+50	−17.5	1.5
114+00	−17.5	1.5
114+50	−18	1

FIELD MEASUREMENTS, CONT.		
STATION	MUDLINE EL. (FT)*	MUDLINE PROBE (FT)
115+00	−19	1
115+50	−16	0.5
116+00	−17	0.5
116+50	−18	0.5
117+00	−18	1
117+50	−18	0
118+00	−17.5	0.5
118+50	−19	0.5
119+00	−18	0
119+50	−16	0
120+00	−12	0
120+24	−6	1
120+50	0	0

* EL. REFERENCE TO TOP OF CAP OR SHEET

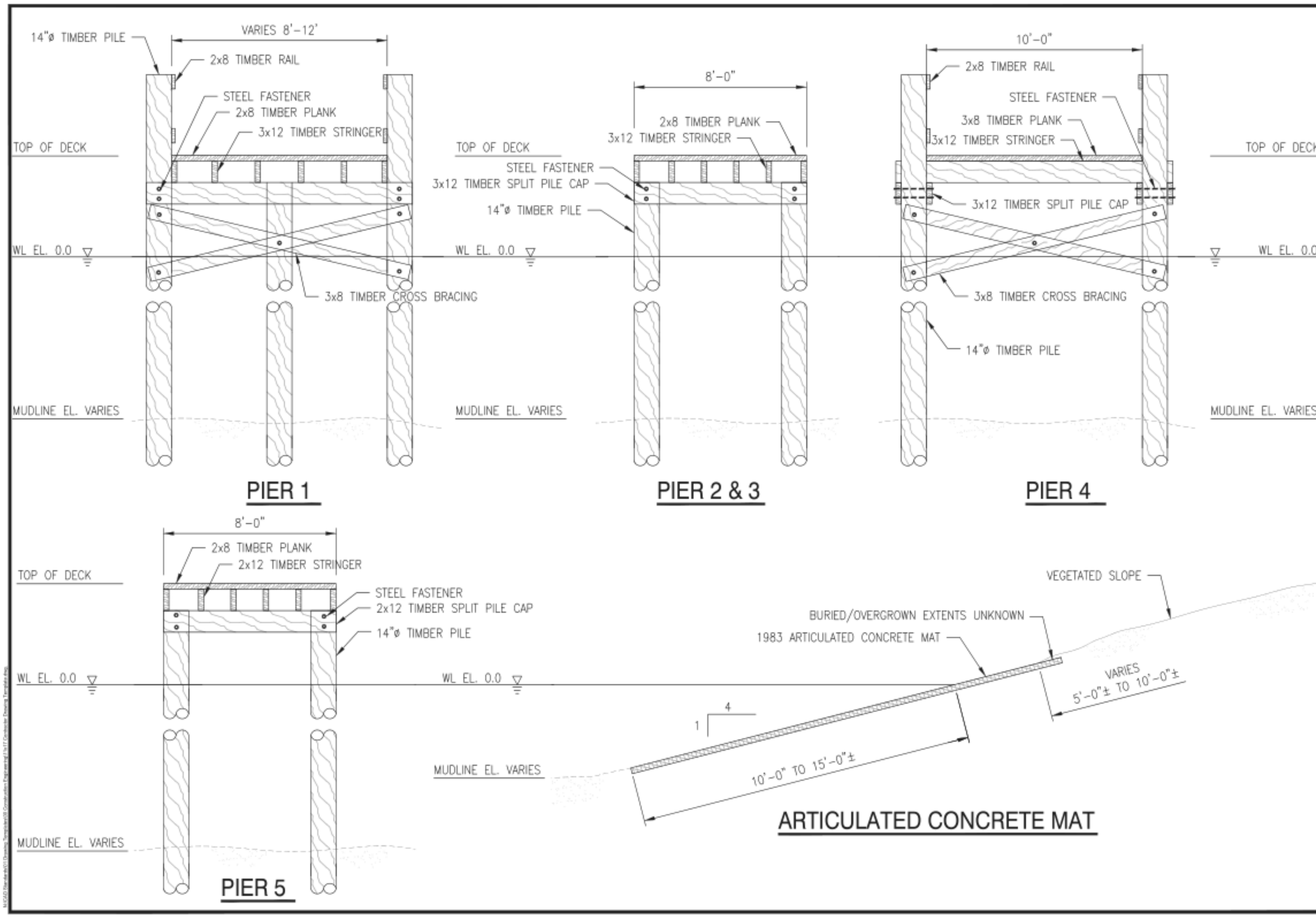
COLLINS ENGINEERS

REVISIONS

WATERFRONT FACILITY ASSESSMENT
PORT OF PALACIOS
SCHEMATIC CROSS SECTIONS
PALACIOS, TX
2022

project no.: 38-13708.00
date: APRIL 2022

FIGURE
28 OF 29



COLLINS ENGINEERS INC.

Texas Registered Firm No. 8781
501 Proctor Street Suite 304
Port Arthur, TX 77640
voice: (409) 812-2223
web: collinsengr.com

REV. NO.	DATE	REVISIONS DESCRIPTION
1		
2		
3		
4		
5		
6		
7		

REVISIONS

WATERFRONT FACILITY ASSESSMENT

PORT OF PALACIOS

SCHEMATIC CROSS SECTIONS

PALACIOS, TX

2022

designed by: DSG
checked by: CTC
approved by: MJS
QA/QC by: CTC
project no.: 38-13706.00
drawing no.: 001
date: APRIL 2022

FIGURE

29 OF 29

APPENDIX B: STEEL SHEETPILE UT READINGS

By: DTG Date: 3/25/22 Project: Port of Palacios Waterfront Inspection

Check: CTC Date: 3/25/22 Subject: Steel Sheetpile Bulkheads

Reading Location	Year of Construction & Assumed Shape	Elevation	Original Thickness (in.)*		Recorded Thickness		Loss (%)		Max. Loss (%)	Rating (based on UT)
			W (in.)	F (in.)	UT W (in.)	UT F (in.)	W	F		
0+00	2004 PZ27	SZ	0.375	0.375	0.325	0.310	13%	17%	17%	MODERATE
		WL	0.375	0.375	0.375	0.365	0%	3%	3%	MINOR
		ML	0.375	0.375	0.375	0.350	0%	7%	7%	MINOR
1+00	2004 PZ27	SZ	0.375	0.375	0.335	0.350	11%	7%	11%	MINOR
		WL	0.375	0.375	0.375	0.375	0%	0%	0%	MINOR
		ML	0.375	0.375	0.375	0.375	0%	0%	0%	MINOR
2+00	2012 NZ14	SZ	0.375	0.375	0.365	0.375	3%	0%	3%	MINOR
		WL	0.375	0.375	0.375	0.375	0%	0%	0%	MINOR
		ML	0.375	0.375	0.375	0.370	0%	1%	1%	MINOR
3+00	2012 NZ14	SZ	0.375	0.375	0.365	0.375	3%	0%	3%	MINOR
		WL	0.375	0.375	0.375	0.375	0%	0%	0%	MINOR
		ML	0.375	0.375	0.375	0.365	0%	3%	3%	MINOR
5+50	1989 PZ22	SZ	0.375	0.375	0.265	0.235	29%	37%	37%	ADVANCED
		WL	0.375	0.375	0.375	0.370	0%	1%	1%	MINOR
		MID	0.375	0.375	0.375	0.365	0%	3%	3%	MINOR
		ML	0.375	0.375	0.375	0.370	0%	1%	1%	MINOR
6+00	1989 PZ22	SZ	0.375	0.375	0.305	0.315	19%	16%	19%	MODERATE
		WL	0.375	0.375	0.375	0.375	0%	0%	0%	MINOR
		MID	0.375	0.375	0.375	0.370	0%	1%	1%	MINOR
		ML	0.375	0.375	0.360	0.375	4%	0%	4%	MINOR
6+50	1989 PZ 22	SZ	0.375	0.375	0.290	0.300	23%	20%	23%	MODERATE
		WL	0.375	0.375	0.370	0.375	1%	0%	1%	MINOR
		MID	0.375	0.375	0.375	0.375	0%	0%	0%	MINOR
		ML	0.375	0.375	0.375	0.370	0%	1%	1%	MINOR
7+00	1989 PZ 22	SZ	0.375	0.375	0.310	0.315	17%	16%	17%	MODERATE
		WL	0.375	0.375	0.370	0.375	1%	0%	1%	MINOR
		MID	0.375	0.375	0.375	0.375	0%	0%	0%	MINOR
		ML	0.375	0.375	0.375	0.370	0%	1%	1%	MINOR
15+00	1987 PZ22	SZ	0.375	0.375	0.315	0.305	16%	19%	19%	MODERATE
		WL	0.375	0.375	0.350	0.340	7%	9%	9%	MINOR
		MID	0.375	0.375	0.350	0.340	7%	9%	9%	MINOR
		ML	0.375	0.375	0.365	0.375	3%	0%	3%	MINOR
15+50	1987 PZ22	SZ	0.375	0.375	0.305	0.325	19%	13%	19%	MODERATE
		WL	0.375	0.375	0.350	0.345	7%	8%	8%	MINOR
		MID	0.375	0.375	0.345	0.345	8%	8%	8%	MINOR
		ML	0.375	0.375	0.345	0.350	8%	7%	8%	MINOR
16+00	1987 PZ22	SZ	0.375	0.375	0.310	0.310	17%	17%	17%	MODERATE
		WL	0.375	0.375	0.360	0.365	4%	3%	4%	MINOR
		MID	0.375	0.375	0.365	0.365	3%	3%	3%	MINOR
		ML	0.375	0.375	0.360	0.370	4%	1%	4%	MINOR

*Due to limited construction documentation, original thickness shown are estimated and/or approximated from readings in intact areas where possible.
Abbreviations: WL = Water Line; SZ = Splash zone; Mid = Mid-pile; ML = Mudline

By: DTG Date: 3/25/22 Project: Port of Palacios Waterfront Inspection

Check: CTC Date: 3/25/22 Subject: Steel Sheetpile Bulkheads

Reading Location	Year of Construction & Assumed Shape	Elevation	Original Thickness (in.)*		Recorded Thickness		Loss (%)		Max. Loss (%)	Rating (based on UT)
			W (in.)	F (in.)	UT W (in.)	UT F (in.)	W	F		
16+50	1987 PZ22	SZ	0.375	0.375	0.305	0.315	19%	16%	19%	MODERATE
		WL	0.375	0.375	0.360	0.370	4%	1%	4%	MINOR
		MID	0.375	0.375	0.360	0.370	4%	1%	4%	MINOR
		ML	0.375	0.375	0.360	0.370	4%	1%	4%	MINOR
20+00	2010 NZ19	SZ	0.375	0.375	0.355	0.365	5%	3%	5%	MINOR
		WL	0.375	0.375	0.375	0.375	0%	0%	0%	MINOR
		ML	0.375	0.375	0.375	0.370	0%	1%	1%	MINOR
21+00	2010 NZ19	SZ	0.375	0.375	0.365	0.350	3%	7%	7%	MINOR
		WL	0.375	0.375	0.375	0.375	0%	0%	0%	MINOR
		ML	0.375	0.375	0.375	0.375	0%	0%	0%	MINOR
22+00	2010 NZ19	SZ	0.375	0.375	0.375	0.350	0%	7%	7%	MINOR
		WL	0.375	0.375	0.375	0.375	0%	0%	0%	MINOR
		ML	0.375	0.375	0.375	0.375	0%	0%	0%	MINOR
23+00	2010 NZ19	SZ	0.375	0.375	0.350	0.335	7%	11%	11%	MINOR
		WL	0.375	0.375	0.375	0.375	0%	0%	0%	MINOR
		ML	0.375	0.375	0.375	0.375	0%	0%	0%	MINOR
24+00	2010 NZ19	SZ	0.375	0.375	0.335	0.345	11%	8%	11%	MINOR
		WL	0.375	0.375	0.370	0.375	1%	0%	1%	MINOR
		ML	0.375	0.375	0.370	0.375	1%	0%	1%	MINOR
32+00	Late 80's PZ22	SZ	0.375	0.375	0.305	0.310	19%	17%	19%	MODERATE
		WL	0.375	0.375	0.365	0.370	3%	1%	3%	MINOR
		MID	0.375	0.375	0.375	0.370	0%	1%	1%	MINOR
		ML	0.375	0.375	0.375	0.375	0%	0%	0%	MINOR
32+50	1985 PZ22	SZ	0.375	0.375	0.205	0.195	45%	48%	48%	ADVANCED
		WL	0.375	0.375	0.345	0.330	8%	12%	12%	MINOR
		MID	0.375	0.375	0.350	0.370	7%	1%	7%	MINOR
		ML	0.375	0.375	0.350	0.360	7%	4%	7%	MINOR
33+00	1985 PZ22	SZ	0.375	0.375	0.155	0.175	**59%**	**53%**	**59%**	SEVERE
		WL	0.375	0.375	0.350	0.345	7%	8%	8%	MINOR
		MID	0.375	0.375	0.350	0.355	7%	5%	7%	MINOR
		ML	0.375	0.375	0.350	0.360	7%	4%	7%	MINOR
33+50	1985 PZ22	SZ	0.375	0.375	0.000	0.000	**100%**	**100%**	**100%**	SEVERE
		WL	0.375	0.375	0.360	0.365	4%	3%	4%	MINOR
		MID	0.375	0.375	0.365	0.375	3%	0%	3%	MINOR
		ML	0.375	0.375	0.365	0.360	3%	4%	4%	MINOR

*Due to limited construction documentation, original thickness shown are estimated and/or approximated from readings in intact areas where possible.

Abbreviations: WL = Water Line; SZ = Splash zone; Mid = Mid-pile; ML = Mudline

By: DTG Date: 3/25/22 Project: Port of Palacios Waterfront Inspection

Check: CTC Date: 3/25/22 Subject: Steel Sheetpile Bulkheads

Reading Location	Year of Construction & Assumed Shape	Elevation	Original Thickness (in.)*		Recorded Thickness		Loss (%)		Max. Loss (%)	Rating (based on UT)
			W (in.)	F (in.)	UT W (in.)	UT F (in.)	W	F		
34+00	1985 PZ22	SZ	0.375	0.375	0.175	0.155	**53%**	**59%**	**59%**	SEVERE
		WL	0.375	0.375	0.365	0.350	3%	7%	7%	MINOR
		MID	0.375	0.375	0.355	0.375	5%	0%	5%	MINOR
		ML	0.375	0.375	0.365	0.375	3%	0%	3%	MINOR
34+50	1985 PZ22	SZ	0.375	0.375	0.165	0.175	**56%**	**53%**	**56%**	SEVERE
		WL	0.375	0.375	0.360	0.365	4%	3%	4%	MINOR
		MID	0.375	0.375	0.360	0.365	4%	3%	4%	MINOR
		ML	0.375	0.375	0.360	0.365	4%	3%	4%	MINOR
35+00	1985 PZ22	SZ	0.375	0.375	0.155	0.165	**59%**	**56%**	**59%**	SEVERE
		WL	0.375	0.375	0.355	0.355	5%	5%	5%	MINOR
		MID	0.375	0.375	0.355	0.350	5%	7%	7%	MINOR
		ML	0.375	0.375	0.355	0.345	5%	8%	8%	MINOR
35+50	1985 PZ22	SZ	0.375	0.375	0.165	0.205	**56%**	45%	**56%**	SEVERE
		WL	0.375	0.375	0.350	0.345	7%	8%	8%	MINOR
		MID	0.375	0.375	0.355	0.350	5%	7%	7%	MINOR
		ML	0.375	0.375	0.350	0.350	7%	7%	7%	MINOR
36+00	1985 PZ22	SZ	0.375	0.375	0.265	0.175	29%	**53%**	**53%**	SEVERE
		WL	0.375	0.375	0.365	0.360	3%	4%	4%	MINOR
		MID	0.375	0.375	0.365	0.365	3%	3%	3%	MINOR
		ML	0.375	0.375	0.355	0.365	5%	3%	5%	MINOR
36+50	1985 PZ22	SZ	0.375	0.375	0.000	0.000	**100%**	**100%**	**100%**	SEVERE
		WL	0.375	0.375	0.355	0.350	5%	7%	7%	MINOR
		MID	0.375	0.375	0.355	0.355	5%	5%	5%	MINOR
		ML	0.375	0.375	0.355	0.360	5%	4%	5%	MINOR
37+00	1985 PZ22	SZ	0.375	0.375	0.000	0.000	**100%**	**100%**	**100%**	SEVERE
		WL	0.375	0.375	0.355	0.355	5%	5%	5%	MINOR
		MID	0.375	0.375	0.350	0.345	7%	8%	8%	MINOR
		ML	0.375	0.375	0.350	0.345	7%	8%	8%	MINOR
37+50	1985 PZ22	SZ	0.375	0.375	0.205	0.185	45%	**51%**	**51%**	SEVERE
		WL	0.375	0.375	0.345	0.350	8%	7%	8%	MINOR
		MID	0.375	0.375	0.350	0.350	7%	7%	7%	MINOR
		ML	0.375	0.375	0.345	0.350	8%	7%	8%	MINOR
38+00	1985 PZ22	SZ	0.375	0.375	0.175	0.185	**53%**	**51%**	**53%**	SEVERE
		WL	0.375	0.375	0.350	0.355	7%	5%	7%	MINOR
		MID	0.375	0.375	0.345	0.350	8%	7%	8%	MINOR
		ML	0.375	0.375	0.350	0.350	7%	7%	7%	MINOR
38+50	1985 PZ22	SZ	0.375	0.375	0.150	0.205	**60%**	45%	**60%**	SEVERE
		WL	0.375	0.375	0.350	0.340	7%	9%	9%	MINOR
		MID	0.375	0.375	0.350	0.350	7%	7%	7%	MINOR
		ML	0.375	0.375	0.350	0.350	7%	7%	7%	MINOR
39+00	1985 PZ22	SZ	0.375	0.375	0.200	0.235	47%	37%	47%	ADVANCED
		WL	0.375	0.375	0.350	0.355	7%	5%	7%	MINOR
		MID	0.375	0.375	0.355	0.350	5%	7%	7%	MINOR
		ML	0.375	0.375	0.355	0.360	5%	4%	5%	MINOR
39+50	1985 PZ22	SZ	0.375	0.375	0.205	0.225	45%	40%	45%	ADVANCED
		WL	0.375	0.375	0.365	0.365	3%	3%	3%	MINOR
		MID	0.375	0.375	0.355	0.360	5%	4%	5%	MINOR
		ML	0.375	0.375	0.360	0.360	4%	4%	4%	MINOR

*Due to limited construction documentation, original thickness shown are estimated and/or approximated from readings in intact areas where possible.

Abbreviations: WL = Water Line; SZ = Splash zone; Mid = Mid-pile; ML = Mudline

By: DTG Date: 3/25/22 Project: Port of Palacios Waterfront Inspection

Check: CTC Date: 3/25/22 Subject: Steel Sheetpile Bulkheads

Reading Location	Year of Construction & Assumed Shape	Elevation	Original Thickness (in.)*		Recorded Thickness		Loss (%)		Max. Loss (%)	Rating (based on UT)
			W (in.)	F (in.)	UT W (in.)	UT F (in.)	W	F		
40+00	1984 PZ22	SZ	0.375	0.375	0.000	0.000	100%	100%	100%	SEVERE
		WL	0.375	0.375	0.360	0.350	4%	7%	7%	MINOR
		MID	0.375	0.375	0.360	0.355	4%	5%	5%	MINOR
		ML	0.375	0.375	0.365	0.355	3%	5%	5%	MINOR
40+50	1984 PZ22	SZ	0.375	0.375	0.205	0.225	45%	40%	45%	ADVANCED
		WL	0.375	0.375	0.345	0.350	8%	7%	8%	MINOR
		MID	0.375	0.375	0.355	0.345	5%	8%	8%	MINOR
		ML	0.375	0.375	0.355	0.345	5%	8%	8%	MINOR
41+00	1984 PZ22	SZ	0.375	0.375	0.205	0.225	45%	40%	45%	ADVANCED
		WL	0.375	0.375	0.355	0.355	5%	5%	5%	MINOR
		MID	0.375	0.375	0.360	0.355	4%	5%	5%	MINOR
		ML	0.375	0.375	0.360	0.355	4%	5%	5%	MINOR
41+50	1984 PZ22	SZ	0.375	0.375	0.280	0.215	25%	43%	43%	ADVANCED
		WL	0.375	0.375	0.350	0.350	7%	7%	7%	MINOR
		MID	0.375	0.375	0.350	0.345	7%	8%	8%	MINOR
		ML	0.375	0.375	0.355	0.350	5%	7%	7%	MINOR
42+00	1984 PZ22	SZ	0.375	0.375	0.285	0.220	24%	41%	41%	ADVANCED
		WL	0.375	0.375	0.350	0.355	7%	5%	7%	MINOR
		MID	0.375	0.375	0.350	0.350	7%	7%	7%	MINOR
		ML	0.375	0.375	0.350	0.345	7%	8%	8%	MINOR
42+50	1984 PZ22	SZ	0.375	0.375	0.245	0.255	35%	32%	35%	ADVANCED
		WL	0.375	0.375	0.355	0.360	5%	4%	5%	MINOR
		MID	0.375	0.375	0.360	0.355	4%	5%	5%	MINOR
		ML	0.375	0.375	0.360	0.360	4%	4%	4%	MINOR
43+00	1984 PZ22	SZ	0.375	0.375	0.265	0.235	29%	37%	37%	ADVANCED
		WL	0.375	0.375	0.355	0.345	5%	8%	8%	MINOR
		MID	0.375	0.375	0.360	0.345	4%	8%	8%	MINOR
		ML	0.375	0.375	0.355	0.340	5%	9%	9%	MINOR
43+50	1984 PZ22	SZ	0.375	0.375	0.275	0.235	27%	37%	37%	ADVANCED
		WL	0.375	0.375	0.360	0.360	4%	4%	4%	MINOR
		MID	0.375	0.375	0.365	0.350	3%	7%	7%	MINOR
		ML	0.375	0.375	0.345	0.350	8%	7%	8%	MINOR
44+00	1984 PZ22	SZ	0.375	0.375	0.265	0.215	29%	43%	43%	ADVANCED
		WL	0.375	0.375	0.370	0.365	1%	3%	3%	MINOR
		MID	0.375	0.375	0.365	0.375	3%	0%	3%	MINOR
		ML	0.375	0.375	0.365	0.375	3%	0%	3%	MINOR
44+50	1984 PZ22	SZ	0.375	0.375	0.235	0.225	37%	40%	40%	ADVANCED
		WL	0.375	0.375	0.360	0.355	4%	5%	5%	MINOR
		MID	0.375	0.375	0.360	0.355	4%	5%	5%	MINOR
		ML	0.375	0.375	0.355	0.350	5%	7%	7%	MINOR
45+00	1984 PZ22	SZ	0.375	0.375	0.275	0.200	27%	47%	47%	ADVANCED
		WL	0.375	0.375	0.340	0.350	9%	7%	9%	MINOR
		MID	0.375	0.375	0.360	0.350	4%	7%	7%	MINOR
		ML	0.375	0.375	0.360	0.345	4%	8%	8%	MINOR
45+50	1984 PZ22	SZ	0.375	0.375	0.225	0.230	40%	39%	40%	ADVANCED
		WL	0.375	0.375	0.360	0.350	4%	7%	7%	MINOR
		MID	0.375	0.375	0.350	0.350	7%	7%	7%	MINOR
		ML	0.375	0.375	0.355	0.350	5%	7%	7%	MINOR

*Due to limited construction documentation, original thickness shown are estimated and/or approximated from readings in intact areas where possible.
Abbreviations: WL = Water Line; SZ = Splash zone; Mid = Mid-pile; ML = Mudline

By: DTG Date: 3/25/22 Project: Port of Palacios Waterfront Inspection

Check: CTC Date: 3/25/22 Subject: Steel Sheetpile Bulkheads

Reading Location	Year of Construction & Assumed Shape	Elevation	Original Thickness (in.)*		Recorded Thickness		Loss (%)		Max. Loss (%)	Rating (based on UT)
			W (in.)	F (in.)	UT W (in.)	UT F (in.)	W	F		
46+00	1984 PZ22	SZ	0.375	0.375	0.215	0.235	43%	37%	43%	ADVANCED
		WL	0.375	0.375	0.360	0.350	4%	7%	7%	MINOR
		MID	0.375	0.375	0.355	0.350	5%	7%	7%	MINOR
		ML	0.375	0.375	0.355	0.350	5%	7%	7%	MINOR
46+50	1984 PZ22	SZ	0.375	0.375	0.215	0.230	43%	39%	43%	ADVANCED
		WL	0.375	0.375	0.370	0.360	1%	4%	4%	MINOR
		MID	0.375	0.375	0.370	0.360	1%	4%	4%	MINOR
		ML	0.375	0.375	0.360	0.360	4%	4%	4%	MINOR
47+00	1984 PZ22	SZ	0.375	0.375	0.210	0.225	44%	40%	44%	ADVANCED
		WL	0.375	0.375	0.365	0.360	3%	4%	4%	MINOR
		MID	0.375	0.375	0.360	0.360	4%	4%	4%	MINOR
		ML	0.375	0.375	0.360	0.360	4%	4%	4%	MINOR
47+50	1984 PZ22	SZ	0.375	0.375	0.205	0.265	45%	29%	45%	ADVANCED
		WL	0.375	0.375	0.360	0.355	4%	5%	5%	MINOR
		MID	0.375	0.375	0.365	0.355	3%	5%	5%	MINOR
		ML	0.375	0.375	0.365	0.365	3%	3%	3%	MINOR
48+00	1984 PZ22	SZ	0.375	0.375	0.205	0.265	45%	29%	45%	ADVANCED
		WL	0.375	0.375	0.360	0.360	4%	4%	4%	MINOR
		MID	0.375	0.375	0.360	0.360	4%	4%	4%	MINOR
		ML	0.375	0.375	0.360	0.360	4%	4%	4%	MINOR
48+50	1984 PZ22	SZ	0.375	0.375	0.235	0.225	37%	40%	40%	ADVANCED
		WL	0.375	0.375	0.360	0.355	4%	5%	5%	MINOR
		MID	0.375	0.375	0.360	0.355	4%	5%	5%	MINOR
		ML	0.375	0.375	0.360	0.355	4%	5%	5%	MINOR
49+00	1984 PZ22	SZ	0.375	0.375	0.250	0.225	33%	40%	40%	ADVANCED
		WL	0.375	0.375	0.360	0.355	4%	5%	5%	MINOR
		MID	0.375	0.375	0.355	0.355	5%	5%	5%	MINOR
		ML	0.375	0.375	0.365	0.355	3%	5%	5%	MINOR
49+50	1984 PZ22	SZ	0.375	0.375	0.225	0.215	40%	43%	43%	ADVANCED
		WL	0.375	0.375	0.350	0.355	7%	5%	7%	MINOR
		MID	0.375	0.375	0.365	0.355	3%	5%	5%	MINOR
		ML	0.375	0.375	0.360	0.360	4%	4%	4%	MINOR
50+00	1984 PZ22	SZ	0.375	0.375	0.220	0.235	41%	37%	41%	ADVANCED
		WL	0.375	0.375	0.355	0.350	5%	7%	7%	MINOR
		MID	0.375	0.375	0.355	0.355	5%	5%	5%	MINOR
		ML	0.375	0.375	0.350	0.350	7%	7%	7%	MINOR
50+50	1984 PZ22	SZ	0.375	0.375	0.215	0.210	43%	44%	44%	ADVANCED
		WL	0.375	0.375	0.365	0.345	3%	8%	8%	MINOR
		MID	0.375	0.375	0.360	0.355	4%	5%	5%	MINOR
		ML	0.375	0.375	0.360	0.360	4%	4%	4%	MINOR
51+00	1984 PZ22	SZ	0.375	0.375	0.235	0.220	37%	41%	41%	ADVANCED
		WL	0.375	0.375	0.365	0.365	3%	3%	3%	MINOR
		MID	0.375	0.375	0.365	0.365	3%	3%	3%	MINOR
		ML	0.375	0.375	0.365	0.360	3%	4%	4%	MINOR
51+50	1984 PZ22	SZ	0.375	0.375	0.215	0.220	43%	41%	43%	ADVANCED
		WL	0.375	0.375	0.365	0.365	3%	3%	3%	MINOR
		MID	0.375	0.375	0.365	0.360	3%	4%	4%	MINOR
		ML	0.375	0.375	0.360	0.355	4%	5%	5%	MINOR

*Due to limited construction documentation, original thickness shown are estimated and/or approximated from readings in intact areas where possible.

Abbreviations: WL = Water Line; SZ = Splash zone; Mid = Mid-pile; ML = Mudline

By: DTG Date: 3/25/22 Project: Port of Palacios Waterfront Inspection

Check: CTC Date: 3/25/22 Subject: Steel Sheetpile Bulkheads

Reading Location	Year of Construction & Assumed Shape	Elevation	Original Thickness (in.)*		Recorded Thickness		Loss (%)		Max. Loss (%)	Rating (based on UT)
			W (in.)	F (in.)	UT W (in.)	UT F (in.)	W	F		
52+00	1984 PZ22	SZ	0.375	0.375	0.225	0.225	40%	40%	40%	ADVANCED
		WL	0.375	0.375	0.355	0.350	5%	7%	7%	MINOR
		MID	0.375	0.375	0.355	0.350	5%	7%	7%	MINOR
		ML	0.375	0.375	0.355	0.355	5%	5%	5%	MINOR
52+50	1984 PZ22	SZ	0.375	0.375	0.215	0.205	43%	45%	45%	ADVANCED
		WL	0.375	0.375	0.350	0.345	7%	8%	8%	MINOR
		MID	0.375	0.375	0.360	0.350	4%	7%	7%	MINOR
		ML	0.375	0.375	0.355	0.350	5%	7%	7%	MINOR
53+00	1984 PZ22	SZ	0.375	0.375	0.225	0.210	40%	44%	44%	ADVANCED
		WL	0.375	0.375	0.365	0.360	3%	4%	4%	MINOR
		MID	0.375	0.375	0.360	0.355	4%	5%	5%	MINOR
		ML	0.375	0.375	0.360	0.355	4%	5%	5%	MINOR
53+50	1984 PZ22	SZ	0.375	0.375	0.215	0.205	43%	45%	45%	ADVANCED
		WL	0.375	0.375	0.365	0.365	3%	3%	3%	MINOR
		MID	0.375	0.375	0.365	0.360	3%	4%	4%	MINOR
		ML	0.375	0.375	0.365	0.360	3%	4%	4%	MINOR
54+00	1984 PZ22	SZ	0.375	0.375	0.225	0.205	40%	45%	45%	ADVANCED
		WL	0.375	0.375	0.355	0.355	5%	5%	5%	MINOR
		MID	0.375	0.375	0.360	0.355	4%	5%	5%	MINOR
		ML	0.375	0.375	0.365	0.360	3%	4%	4%	MINOR
54+50	1984 PZ22	SZ	0.375	0.375	0.205	0.215	45%	43%	45%	ADVANCED
		WL	0.375	0.375	0.355	0.355	5%	5%	5%	MINOR
		MID	0.375	0.375	0.365	0.350	3%	7%	7%	MINOR
		ML	0.375	0.375	0.360	0.365	4%	3%	4%	MINOR
55+00	1984 PZ22	SZ	0.375	0.375	0.215	0.215	43%	43%	43%	ADVANCED
		WL	0.375	0.375	0.360	0.350	4%	7%	7%	MINOR
		MID	0.375	0.375	0.360	0.365	4%	3%	4%	MINOR
		ML	0.375	0.375	0.360	0.365	4%	3%	4%	MINOR
55+50	Newer NZ22	SZ	0.480	0.480	0.470	0.475	2%	1%	2%	MINOR
		WL	0.480	0.480	0.470	0.470	2%	2%	2%	MINOR
		MID	0.480	0.480	0.475	0.470	1%	2%	2%	MINOR
		ML	0.480	0.480	0.480	0.465	0%	3%	3%	MINOR
56+00	Newer NZ22	SZ	0.480	0.480	0.475	0.475	1%	1%	1%	MINOR
		WL	0.480	0.480	0.475	0.470	1%	2%	2%	MINOR
		MID	0.480	0.480	0.475	0.475	1%	1%	1%	MINOR
		ML	0.480	0.480	0.475	0.475	1%	1%	1%	MINOR
56+50	Newer NZ22	SZ	0.480	0.480	0.475	0.470	1%	2%	2%	MINOR
		WL	0.480	0.480	0.475	0.475	1%	1%	1%	MINOR
		MID	0.480	0.480	0.475	0.470	1%	2%	2%	MINOR
		ML	0.480	0.480	0.475	0.475	1%	1%	1%	MINOR
57+00	Newer NZ22	SZ	0.480	0.480	0.470	0.470	2%	2%	2%	MINOR
		WL	0.480	0.480	0.475	0.470	1%	2%	2%	MINOR
		MID	0.480	0.480	0.475	0.475	1%	1%	1%	MINOR
		ML	0.480	0.480	0.475	0.475	1%	1%	1%	MINOR
57+50	Newer NZ22	SZ	0.480	0.480	0.475	0.475	1%	1%	1%	MINOR
		WL	0.480	0.480	0.475	0.470	1%	2%	2%	MINOR
		MID	0.480	0.480	0.470	0.475	2%	1%	2%	MINOR
		ML	0.480	0.480	0.475	0.475	1%	1%	1%	MINOR

*Due to limited construction documentation, original thickness shown are estimated and/or approximated from readings in intact areas where possible.

Abbreviations: WL = Water Line; SZ = Splash zone; Mid = Mid-pile; ML = Mudline

By: DTG Date: 3/25/22 Project: Port of Palacios Waterfront Inspection

Check: CTC Date: 3/25/22 Subject: Steel Sheetpile Bulkheads

Reading Location	Year of Construction & Assumed Shape	Elevation	Original Thickness (in.)*		Recorded Thickness		Loss (%)		Max. Loss (%)	Rating (based on UT)
			W (in.)	F (in.)	UT W (in.)	UT F (in.)	W	F		
58+00	Newer NZ22	SZ	0.480	0.480	0.470	0.475	2%	1%	2%	MINOR
		WL	0.480	0.480	0.465	0.470	3%	2%	3%	MINOR
		MID	0.480	0.480	0.470	0.470	2%	2%	2%	MINOR
		ML	0.480	0.480	0.470	0.465	2%	3%	3%	MINOR
58+50	Newer NZ22	SZ	0.480	0.480	0.475	0.475	1%	1%	1%	MINOR
		WL	0.480	0.480	0.470	0.470	2%	2%	2%	MINOR
		MID	0.480	0.480	0.470	0.465	2%	3%	3%	MINOR
		ML	0.480	0.480	0.470	0.460	2%	4%	4%	MINOR
59+00	Newer NZ22	SZ	0.480	0.480	0.465	0.470	3%	2%	3%	MINOR
		WL	0.480	0.480	0.475	0.475	1%	1%	1%	MINOR
		MID	0.480	0.480	0.475	0.475	1%	1%	1%	MINOR
		ML	0.480	0.480	0.475	0.465	1%	3%	3%	MINOR
59+50	Newer NZ22	SZ	0.480	0.480	0.460	0.465	4%	3%	4%	MINOR
		WL	0.480	0.480	0.475	0.470	1%	2%	2%	MINOR
		MID	0.480	0.480	0.475	0.470	1%	2%	2%	MINOR
		ML	0.480	0.480	0.470	0.465	2%	3%	3%	MINOR
60+00	2001 PZ22	SZ	0.375	0.375	0.355	0.345	5%	8%	8%	MINOR
		WL	0.375	0.375	0.370	0.365	1%	3%	3%	MINOR
		MID	0.375	0.375	0.365	0.350	3%	7%	7%	MINOR
		ML	0.375	0.375	0.360	0.360	4%	4%	4%	MINOR
60+50	2001 PZ22	SZ	0.375	0.375	0.305	0.310	19%	17%	19%	MODERATE
		WL	0.375	0.375	0.365	0.370	3%	1%	3%	MINOR
		MID	0.375	0.375	0.370	0.370	1%	1%	1%	MINOR
		ML	0.375	0.375	0.375	0.365	0%	3%	3%	MINOR
61+00	2001 PZ22	SZ	0.375	0.375	0.300	0.300	20%	20%	20%	MODERATE
		WL	0.375	0.375	0.350	0.365	7%	3%	7%	MINOR
		MID	0.375	0.375	0.365	0.360	3%	4%	4%	MINOR
		ML	0.375	0.375	0.375	0.365	0%	3%	3%	MINOR
61+50	2001 PZ22	SZ	0.375	0.375	Concealed - End of Basin -					
		WL	0.375	0.375						
		MID	0.375	0.375						
		ML	0.375	0.375						
62+00	2001 PZ22	SZ	0.375	0.375	Concealed - End of Basin -					
		WL	0.375	0.375						
		MID	0.375	0.375						
		ML	0.375	0.375						
62+50	2001 PZ22	SZ	0.375	0.375	Concealed - End of Basin -					
		WL	0.375	0.375						
		MID	0.375	0.375						
		ML	0.375	0.375						
63+00	1983 PZ27	SZ	0.375	0.375	0.365	0.360	3%	4%	4%	MINOR
		WL	0.375	0.375	0.370	0.375	1%	0%	1%	MINOR
		MID	0.375	0.375	0.360	0.375	4%	0%	4%	MINOR
		ML	0.375	0.375	0.375	0.375	0%	0%	0%	MINOR
63+50	1983 PZ27	SZ	0.375	0.375	0.360	0.360	4%	4%	4%	MINOR
		WL	0.375	0.375	0.365	0.370	3%	1%	3%	MINOR
		MID	0.375	0.375	0.370	0.375	1%	0%	1%	MINOR
		ML	0.375	0.375	0.370	0.375	1%	0%	1%	MINOR

*Due to limited construction documentation, original thickness shown are estimated and/or approximated from readings in intact areas where possible.

Abbreviations: WL = Water Line; SZ = Splash zone; Mid = Mid-pile; ML = Mudline

By: DTG Date: 3/25/22 Project: Port of Palacios Waterfront Inspection

Check: CTC Date: 3/25/22 Subject: Steel Sheetpile Bulkheads

Reading Location	Year of Construction & Assumed Shape	Elevation	Original Thickness (in.)*		Recorded Thickness		Loss (%)		Max. Loss (%)	Rating (based on UT)
			W (in.)	F (in.)	UT W (in.)	UT F (in.)	W	F		
64+00	1983 PZ27	SZ	0.375	0.375			100%	100%	100%	SEVERE
		WL	0.375	0.375	0.350	0.355	7%	5%	7%	MINOR
		MID	0.375	0.375	0.355	0.355	5%	5%	5%	MINOR
		ML	0.375	0.375	0.355	0.355	5%	5%	5%	MINOR
64+50	1983 PZ27	SZ	0.375	0.375			100%	100%	100%	SEVERE
		WL	0.375	0.375	0.370	0.375	1%	0%	1%	MINOR
		MID	0.375	0.375	0.365	0.355	3%	5%	5%	MINOR
		ML	0.375	0.375	0.365	0.375	3%	0%	3%	MINOR
65+00	1983 PZ27	SZ	0.375	0.375			100%	100%	100%	SEVERE
		WL	0.375	0.375	0.360	0.360	4%	4%	4%	MINOR
		MID	0.375	0.375	0.360	0.365	4%	3%	4%	MINOR
		ML	0.375	0.375	0.360	0.355	4%	5%	5%	MINOR
65+50	1983 PZ27	SZ	0.375	0.375	0.355	0.355	5%	5%	5%	MINOR
		WL	0.375	0.375	0.360	0.375	4%	0%	4%	MINOR
		MID	0.375	0.375	0.375	0.375	0%	0%	0%	MINOR
		ML	0.375	0.375	0.355	0.360	5%	4%	5%	MINOR
66+00	1983 PZ27	SZ	0.375	0.415	0.330	0.365	12%	12%	12%	MINOR
		WL	0.375	0.415	0.365	0.410	3%	1%	3%	MINOR
		MID	0.375	0.415	0.370	0.415	1%	0%	1%	MINOR
		ML	0.375	0.415	0.365	0.400	3%	4%	4%	MINOR
66+50	1983 PZ27	SZ	0.375	0.415	0.315	0.365	16%	12%	16%	MODERATE
		WL	0.375	0.415	0.375	0.405	0%	2%	2%	MINOR
		MID	0.375	0.415	0.375	0.410	0%	1%	1%	MINOR
		ML	0.375	0.415	0.370	0.410	1%	1%	1%	MINOR
67+00	1983 PZ27	SZ	0.375	0.375	0.310	0.315	17%	16%	17%	MODERATE
		WL	0.375	0.375	0.360	0.375	4%	0%	4%	MINOR
		MID	0.375	0.375	0.360	0.375	4%	0%	4%	MINOR
		ML	0.375	0.375	0.360	0.375	4%	0%	4%	MINOR
67+50	1983 PZ27	SZ	0.375	0.375	0.295	0.305	21%	19%	21%	MODERATE
		WL	0.375	0.375	0.375	0.385	0%	-3%	0%	MINOR
		MID	0.375	0.375	0.375	0.385	0%	-3%	0%	MINOR
		ML	0.375	0.375	0.370	0.385	1%	-3%	1%	MINOR
68+00	1983 PZ27	SZ	0.375	0.375	0.300	0.275	20%	27%	27%	MODERATE
		WL	0.375	0.375	0.365	0.375	3%	0%	3%	MINOR
		MID	0.375	0.375	0.370	0.375	1%	0%	1%	MINOR
		ML	0.375	0.375	0.365	0.375	3%	0%	3%	MINOR
68+50	1983 PZ27	SZ	0.375	0.375	0.310	0.305	17%	19%	19%	MODERATE
		WL	0.375	0.375	0.370	0.375	1%	0%	1%	MINOR
		MID	0.375	0.375	0.365	0.370	3%	1%	3%	MINOR
		ML	0.375	0.375	0.370	0.375	1%	0%	1%	MINOR
69+00	1983 PZ27	SZ	0.375	0.375	0.315	0.320	16%	15%	16%	MODERATE
		WL	0.375	0.375	0.370	0.375	1%	0%	1%	MINOR
		MID	0.375	0.375	0.370	0.375	1%	0%	1%	MINOR
		ML	0.375	0.375	0.370	0.375	1%	0%	1%	MINOR
69+50	1983 PZ27	SZ	0.375	0.375	0.310	0.315	17%	16%	17%	MODERATE
		WL	0.375	0.375	0.365	0.370	3%	1%	3%	MINOR
		MID	0.375	0.375	0.370	0.375	1%	0%	1%	MINOR
		ML	0.375	0.375	0.370	0.370	1%	1%	1%	MINOR

*Due to limited construction documentation, original thickness shown are estimated and/or approximated from readings in intact areas where possible.

Abbreviations: WL = Water Line; SZ = Splash zone; Mid = Mid-pile; ML = Mudline

By: DTG Date: 3/25/22 Project: Port of Palacios Waterfront Inspection

Check: CTC Date: 3/25/22 Subject: Steel Sheetpile Bulkheads

Reading Location	Year of Construction & Assumed Shape	Elevation	Original Thickness (in.)*		Recorded Thickness		Loss (%)		Max. Loss (%)	Rating (based on UT)
			W (in.)	F (in.)	UT W (in.)	UT F (in.)	W	F		
70+00	2008 PZ27	SZ	0.375	0.375	0.345	0.345	8%	8%	8%	MINOR
		WL	0.375	0.375	0.355	0.345	5%	8%	8%	MINOR
		ML	0.375	0.375	0.365	0.370	3%	1%	3%	MINOR
71+00	2008 PZ27	SZ	0.375	0.375	0.355	0.325	5%	13%	13%	MINOR
		WL	0.375	0.375	0.360	0.325	4%	13%	13%	MINOR
		ML	0.375	0.375	0.365	0.325	3%	13%	13%	MINOR
72+00	2008 PZ27	SZ	0.375	0.375	0.360	0.320	4%	15%	15%	MINOR
		WL	0.375	0.375	0.365	0.315	3%	16%	16%	MODERATE
		ML	0.375	0.375	0.365	0.330	3%	12%	12%	MINOR
73+00	2008 PZ27	SZ	0.375	0.375	0.345	0.345	8%	8%	8%	MINOR
		WL	0.375	0.375	0.370	0.340	1%	9%	9%	MINOR
		ML	0.375	0.375	0.375	0.345	0%	8%	8%	MINOR
74+00	2008 PZ27	SZ	0.375	0.375	0.365	0.330	3%	12%	12%	MINOR
		WL	0.375	0.375	0.355	0.320	5%	15%	15%	MINOR
		ML	0.375	0.375	0.355	0.320	5%	15%	15%	MINOR
75+00	2008 PZ27	SZ	0.375	0.375	0.355	0.325	5%	13%	13%	MINOR
		WL	0.375	0.375	0.360	0.325	4%	13%	13%	MINOR
		ML	0.375	0.375	0.360	0.325	4%	13%	13%	MINOR
76+00	2008 PZ27	SZ	0.375	0.375	0.345	0.350	8%	7%	8%	MINOR
		WL	0.375	0.375	0.355	0.370	5%	1%	5%	MINOR
		ML	0.375	0.375	0.355	0.370	5%	1%	5%	MINOR
77+00	2008 PZ27	SZ	0.375	0.375	0.350	0.330	7%	12%	12%	MINOR
		WL	0.375	0.375	0.365	0.325	3%	13%	13%	MINOR
		ML	0.375	0.375	0.365	0.325	3%	13%	13%	MINOR
78+00	2008 PZ27	SZ	0.375	0.375	0.360	0.300	4%	20%	20%	MODERATE
		WL	0.375	0.375	0.375	0.325	0%	13%	13%	MINOR
		ML	0.375	0.375	0.370	0.330	1%	12%	12%	MINOR
79+00	2008 PZ27	SZ	0.375	0.375	0.315	0.355	16%	5%	16%	MODERATE
		WL	0.375	0.375	0.355	0.325	5%	13%	13%	MINOR
		ML	0.375	0.375	0.365	0.325	3%	13%	13%	MINOR
80+00	2008 PZ27	SZ	0.375	0.375	0.340	0.355	9%	5%	9%	MINOR
		WL	0.375	0.375	0.345	0.375	8%	0%	8%	MINOR
		ML	0.375	0.375	0.335	0.320	11%	15%	15%	MINOR
81+00	2008 PZ27	SZ	0.375	0.375	0.335	0.340	11%	9%	11%	MINOR
		WL	0.375	0.375	0.360	0.330	4%	12%	12%	MINOR
		ML	0.375	0.375	0.370	0.330	1%	12%	12%	MINOR
82+00	2008 PZ27	SZ	0.375	0.375	0.365	0.330	3%	12%	12%	MINOR
		WL	0.375	0.375	0.355	0.325	5%	13%	13%	MINOR
		ML	0.375	0.375	0.365	0.335	3%	11%	11%	MINOR
83+00	2008 PZ27	SZ	0.375	0.375	0.350	0.335	7%	11%	11%	MINOR
		WL	0.375	0.375	0.355	0.320	5%	15%	15%	MINOR
		ML	0.375	0.375	0.355	0.315	5%	16%	16%	MODERATE
84+00	2008 PZ27	SZ	0.375	0.375	0.350	0.370	7%	1%	7%	MINOR
		WL	0.375	0.375	0.355	0.370	5%	1%	5%	MINOR
		ML	0.375	0.375	0.355	0.365	5%	3%	5%	MINOR

*Due to limited construction documentation, original thickness shown are estimated and/or approximated from readings in intact areas where possible.

Abbreviations: WL = Water Line; SZ = Splash zone; Mid = Mid-pile; ML = Mudline

By: DTG Date: 3/25/22 Project: Port of Palacios Waterfront Inspection

Check: CTC Date: 3/25/22 Subject: Steel Sheetpile Bulkheads

Reading Location	Year of Construction & Assumed Shape	Elevation	Original Thickness (in.)*		Recorded Thickness		Loss (%)		Max. Loss (%)	Rating (based on UT)
			W (in.)	F (in.)	UT W (in.)	UT F (in.)	W	F		
85+00	2008 PZ27	SZ	0.375	0.375	0.335	0.325	11%	13%	13%	MINOR
		WL	0.375	0.375	0.360	0.330	4%	12%	12%	MINOR
		ML	0.375	0.375	0.365	0.335	3%	11%	11%	MINOR
86+00	2008 PZ27	SZ	0.375	0.375	0.320	0.320	15%	15%	15%	MINOR
		WL	0.375	0.375	0.375	0.320	0%	15%	15%	MINOR
		ML	0.375	0.375	0.380	0.320	-1%	15%	15%	MINOR
87+00	2008 PZ27	SZ	0.375	0.375	0.345	0.325	8%	13%	13%	MINOR
		WL	0.375	0.375	0.360	0.365	4%	3%	4%	MINOR
		ML	0.375	0.375	0.365	0.365	3%	3%	3%	MINOR
88+00	2008 PZ27	SZ	0.375	0.375	0.360	0.365	4%	3%	4%	MINOR
		WL	0.375	0.375	0.375	0.375	0%	0%	0%	MINOR
		ML	0.375	0.375	0.360	0.375	4%	0%	4%	MINOR
89+00	2008 PZ27	SZ	0.375	0.375	0.365	0.310	3%	17%	17%	MODERATE
		WL	0.375	0.375	0.360	0.375	4%	0%	4%	MINOR
		ML	0.375	0.375	0.360	0.375	4%	0%	4%	MINOR
90+00	2008 PZ27	SZ	0.375	0.375	0.325	0.335	13%	11%	13%	MINOR
		WL	0.375	0.375	0.365	0.375	3%	0%	3%	MINOR
		ML	0.375	0.375	0.370	0.375	1%	0%	1%	MINOR
91+00	2008 PZ27	SZ	0.375	0.375	0.330	0.335	12%	11%	12%	MINOR
		WL	0.375	0.375	0.365	0.375	3%	0%	3%	MINOR
		ML	0.375	0.375	0.365	0.375	3%	0%	3%	MINOR
92+00	2008 PZ27	SZ	0.375	0.375	0.325	0.335	13%	11%	13%	MINOR
		WL	0.375	0.375	0.360	0.375	4%	0%	4%	MINOR
		ML	0.375	0.375	0.360	0.375	4%	0%	4%	MINOR
93+00	2008 PZ27	SZ	0.375	0.375	0.375	0.320	0%	15%	15%	MINOR
		WL	0.375	0.375	0.365	0.375	3%	0%	3%	MINOR
		ML	0.375	0.375	0.365	0.375	3%	0%	3%	MINOR
94+00	2008 PZ27	SZ	0.375	0.375	0.320	0.320	15%	15%	15%	MINOR
		WL	0.375	0.375	0.365	0.375	3%	0%	3%	MINOR
		ML	0.375	0.375	0.365	0.375	3%	0%	3%	MINOR
95+00	2008 PZ27	SZ	0.375	0.375	0.315	0.320	16%	15%	16%	MODERATE
		WL	0.375	0.375	0.375	0.370	0%	1%	1%	MINOR
		ML	0.375	0.375	0.370	0.375	1%	0%	1%	MINOR
96+00	2008 PZ27	SZ	0.375	0.375	0.300	0.285	20%	24%	24%	MODERATE
		WL	0.375	0.375	0.375	0.365	0%	3%	3%	MINOR
		ML	0.375	0.375	0.375	0.375	0%	0%	0%	MINOR
97+00	2008 PZ27	SZ	0.375	0.375	0.295	0.315	21%	16%	21%	MODERATE
		WL	0.375	0.375	0.360	0.375	4%	0%	4%	MINOR
		ML	0.375	0.375	0.360	0.375	4%	0%	4%	MINOR

*Due to limited construction documentation, original thickness shown are estimated and/or approximated from readings in intact areas where possible.
Abbreviations: WL = Water Line; SZ = Splash zone; Mid = Mid-pile; ML = Mudline

By: DTG Date: 3/25/22 Project: Port of Palacios Waterfront Inspection

Check: CTC Date: 3/25/22 Subject: Steel Sheetpile Bulkheads

Reading Location	Year of Construction & Assumed Shape	Elevation	Original Thickness (in.)*		Recorded Thickness		Loss (%)		Max. Loss (%)	Rating (based on UT)
			W (in.)	F (in.)	UT W (in.)	UT F (in.)	W	F		
97+50	1983 PZ27	SZ	0.375	0.375	0.300	0.285	20%	24%	24%	MODERATE
		WL	0.375	0.375	0.370	0.375	1%	0%	1%	MINOR
		MID	0.375	0.375	0.365	0.370	3%	1%	3%	MINOR
		ML	0.375	0.375	0.370	0.375	1%	0%	1%	MINOR
98+00	1983 PZ27	SZ	0.375	0.375	0.285	0.300	24%	20%	24%	MODERATE
		WL	0.375	0.375	0.370	0.375	1%	0%	1%	MINOR
		MID	0.375	0.375	0.365	0.375	3%	0%	3%	MINOR
		ML	0.375	0.375	0.375	0.370	0%	1%	1%	MINOR
98+50	1983 PZ27	SZ	0.375	0.375	0.215	0.225	43%	40%	43%	ADVANCED
		WL	0.375	0.375	0.375	0.365	0%	3%	3%	MINOR
		MID	0.375	0.375	0.375	0.370	0%	1%	1%	MINOR
		ML	0.375	0.375	0.365	0.375	3%	0%	3%	MINOR
99+00	1983 PZ27	SZ	0.375	0.375	0.180	0.290	**52%**	23%	**52%**	SEVERE
		WL	0.375	0.375	0.370	0.375	1%	0%	1%	MINOR
		MID	0.375	0.375	0.375	0.375	0%	0%	0%	MINOR
		ML	0.375	0.375	0.375	0.300	0%	20%	20%	MODERATE
99+50	1983 PZ27	SZ	0.375	0.375	0.215	0.220	43%	41%	43%	ADVANCED
		WL	0.375	0.375	0.365	0.370	3%	1%	3%	MINOR
		MID	0.375	0.375	0.375	0.370	0%	1%	1%	MINOR
		ML	0.375	0.375	0.370	0.375	1%	0%	1%	MINOR
100+00	1983 PZ27	SZ	0.375	0.375	0.220	0.215	41%	43%	43%	ADVANCED
		WL	0.375	0.375	0.360	0.375	4%	0%	4%	MINOR
		MID	0.375	0.375	0.365	0.375	3%	0%	3%	MINOR
		ML	0.375	0.375	0.365	0.375	3%	0%	3%	MINOR
100+50	1983 PZ27	SZ	0.375	0.375	0.250	0.300	33%	20%	33%	ADVANCED
		WL	0.375	0.375	0.365	0.370	3%	1%	3%	MINOR
		MID	0.375	0.375	0.375	0.365	0%	3%	3%	MINOR
		ML	0.375	0.375	0.365	0.375	3%	0%	3%	MINOR
101+00	1983 PZ27	SZ	0.375	0.375	0.225	0.230	40%	39%	40%	ADVANCED
		WL	0.375	0.375	0.370	0.370	1%	1%	1%	MINOR
		MID	0.375	0.375	0.370	0.365	1%	3%	3%	MINOR
		ML	0.375	0.375	0.360	0.365	4%	3%	4%	MINOR
101+50	1983 PZ27	SZ	0.375	0.375	0.215	0.225	43%	40%	43%	ADVANCED
		WL	0.375	0.375	0.365	0.375	3%	0%	3%	MINOR
		MID	0.375	0.375	0.370	0.365	1%	3%	3%	MINOR
		ML	0.375	0.375	0.375	0.370	0%	1%	1%	MINOR
102+00	1983 PZ27	SZ	0.375	0.375	0.225	0.215	40%	43%	43%	ADVANCED
		WL	0.375	0.375	0.370	0.375	1%	0%	1%	MINOR
		MID	0.375	0.375	0.360	0.365	4%	3%	4%	MINOR
		ML	0.375	0.375	0.360	0.370	4%	1%	4%	MINOR
102+50	1983 PZ27	SZ	0.375	0.375	0.220	0.225	41%	40%	41%	ADVANCED
		WL	0.375	0.375	0.365	0.370	3%	1%	3%	MINOR
		MID	0.375	0.375	0.375	0.365	0%	3%	3%	MINOR
		ML	0.375	0.375	0.370	0.375	1%	0%	1%	MINOR
103+00	1983 PZ27	SZ	0.375	0.375	0.215	0.200	43%	47%	47%	ADVANCED
		WL	0.375	0.375	0.345	0.350	8%	7%	8%	MINOR
		MID	0.375	0.375	0.345	0.360	8%	4%	8%	MINOR
		ML	0.375	0.375	0.345	0.355	8%	5%	8%	MINOR

*Due to limited construction documentation, original thickness shown are estimated and/or approximated from readings in intact areas where possible.
Abbreviations: WL = Water Line; SZ = Splash zone; Mid = Mid-pile; ML = Mudline

By: DTG Date: 3/25/22 Project: Port of Palacios Waterfront Inspection

Check: CTC Date: 3/25/22 Subject: Steel Sheetpile Bulkheads

Reading Location	Year of Construction & Assumed Shape	Elevation	Original Thickness (in.)*		Recorded Thickness		Loss (%)		Max. Loss (%)	Rating (based on UT)
			W (in.)	F (in.)	UT W (in.)	UT F (in.)	W	F		
103+50	1983 PZ27	SZ	0.375	0.375	0.345	0.345	8%	8%	8%	MINOR
		WL	0.375	0.375	0.355	0.365	5%	3%	5%	MINOR
		MID	0.375	0.375	0.360	0.365	4%	3%	4%	MINOR
		ML	0.375	0.375	0.350	0.360	7%	4%	7%	MINOR
104+00	1983 PZ27	SZ	0.375	0.375	0.335	0.340	11%	9%	11%	MINOR
		WL	0.375	0.375	0.330	0.350	12%	7%	12%	MINOR
		MID	0.375	0.375	0.330	0.350	12%	7%	12%	MINOR
		ML	0.375	0.375	0.345	0.350	8%	7%	8%	MINOR
104+50	1983 PZ27	SZ	0.375	0.375	0.330	0.340	12%	9%	12%	MINOR
		WL	0.375	0.375	0.335	0.350	11%	7%	11%	MINOR
		MID	0.375	0.375	0.345	0.350	8%	7%	8%	MINOR
		ML	0.375	0.375	0.340	0.355	9%	5%	9%	MINOR
105+00	1983 PZ27	SZ	0.375	0.375	0.325	0.330	13%	12%	13%	MINOR
		WL	0.375	0.375	0.335	0.350	11%	7%	11%	MINOR
		MID	0.375	0.375	0.355	0.360	5%	4%	5%	MINOR
		ML	0.375	0.375	0.340	0.350	9%	7%	9%	MINOR
105+50	1983 PZ27	SZ	0.375	0.375	0.355	0.355	5%	5%	5%	MINOR
		WL	0.375	0.375	0.350	0.355	7%	5%	7%	MINOR
		MID	0.375	0.375	0.350	0.360	7%	4%	7%	MINOR
		ML	0.375	0.375	0.345	0.355	8%	5%	8%	MINOR
106+00	1983 PZ27	SZ	0.375	0.375	0.350	0.355	7%	5%	7%	MINOR
		WL	0.375	0.375	0.345	0.370	8%	1%	8%	MINOR
		MID	0.375	0.375	0.345	0.370	8%	1%	8%	MINOR
		ML	0.375	0.375	0.350	0.370	7%	1%	7%	MINOR
106+50	1983 PZ27	SZ	0.375	0.375	0.345	0.350	8%	7%	8%	MINOR
		WL	0.375	0.375	0.355	0.360	5%	4%	5%	MINOR
		MID	0.375	0.375	0.350	0.360	7%	4%	7%	MINOR
		ML	0.375	0.375	0.345	0.360	8%	4%	8%	MINOR
107+00	1983 PZ27	SZ	0.375	0.375	0.350	0.350	7%	7%	7%	MINOR
		WL	0.375	0.375	0.345	0.355	8%	5%	8%	MINOR
		MID	0.375	0.375	0.345	0.355	8%	5%	8%	MINOR
		ML	0.375	0.375	0.350	0.360	7%	4%	7%	MINOR
107+50	1983 PZ27	SZ	0.375	0.375	0.345	0.360	8%	4%	8%	MINOR
		WL	0.375	0.375	0.345	0.350	8%	7%	8%	MINOR
		MID	0.375	0.375	0.345	0.350	8%	7%	8%	MINOR
		ML	0.375	0.375	0.350	0.350	7%	7%	7%	MINOR
108+00	1983 PZ27	SZ	0.375	0.375	0.345	0.345	8%	8%	8%	MINOR
		WL	0.375	0.375	0.345	0.350	8%	7%	8%	MINOR
		MID	0.375	0.375	0.350	0.350	7%	7%	7%	MINOR
		ML	0.375	0.375	0.345	0.350	8%	7%	8%	MINOR
108+50	1983 PZ27	SZ	0.375	0.375	0.355	0.345	5%	8%	8%	MINOR
		WL	0.375	0.375	0.365	0.360	3%	4%	4%	MINOR
		MID	0.375	0.375	0.355	0.360	5%	4%	5%	MINOR
		ML	0.375	0.375	0.365	0.370	3%	1%	3%	MINOR
109+00	1983 PZ27	SZ	0.375	0.375	0.365	0.355	3%	5%	5%	MINOR
		WL	0.375	0.375	0.375	0.375	0%	0%	0%	MINOR
		MID	0.375	0.375	0.375	0.375	0%	0%	0%	MINOR
		ML	0.375	0.375	0.375	0.375	0%	0%	0%	MINOR

*Due to limited construction documentation, original thickness shown are estimated and/or approximated from readings in intact areas where possible.

Abbreviations: WL = Water Line; SZ = Splash zone; Mid = Mid-pile; ML = Mudline

By: DTG Date: 3/25/22 Project: Port of Palacios Waterfront Inspection

Check: CTC Date: 3/25/22 Subject: Steel Sheetpile Bulkheads

Reading Location	Year of Construction & Assumed Shape	Elevation	Original Thickness (in.)*		Recorded Thickness		Loss (%)		Max. Loss (%)	Rating (based on UT)
			W (in.)	F (in.)	UT W (in.)	UT F (in.)	W	F		
109+50	1983 PZ27	SZ	0.375	0.375	0.345	0.355	8%	5%	8%	MINOR
		WL	0.375	0.375	0.355	0.355	5%	5%	5%	MINOR
		MID	0.375	0.375	0.350	0.355	7%	5%	7%	MINOR
		ML	0.375	0.375	0.360	0.355	4%	5%	5%	MINOR
110+00	1983 PZ27	SZ	0.375	0.375	0.340	0.345	9%	8%	9%	MINOR
		WL	0.375	0.375	0.345	0.355	8%	5%	8%	MINOR
		MID	0.375	0.375	0.345	0.355	8%	5%	8%	MINOR
		ML	0.375	0.375	0.345	0.350	8%	7%	8%	MINOR
110+50	1983 PZ27	SZ	0.375	0.375	0.345	0.340	8%	9%	9%	MINOR
		WL	0.375	0.375	0.350	0.355	7%	5%	7%	MINOR
		MID	0.375	0.375	0.355	0.355	5%	5%	5%	MINOR
		ML	0.375	0.375	0.345	0.355	8%	5%	8%	MINOR
111+00	1983 PZ27	SZ	0.375	0.375	0.315	0.310	16%	17%	17%	MODERATE
		WL	0.375	0.375	0.350	0.355	7%	5%	7%	MINOR
		MID	0.375	0.375	0.350	0.355	7%	5%	7%	MINOR
		ML	0.375	0.375	0.350	0.350	7%	7%	7%	MINOR
111+50	1983 PZ27	SZ	0.375	0.375	0.345	0.345	8%	8%	8%	MINOR
		WL	0.375	0.375	0.355	0.355	5%	5%	5%	MINOR
		MID	0.375	0.375	0.350	0.350	7%	7%	7%	MINOR
		ML	0.375	0.375	0.355	0.355	5%	5%	5%	MINOR
112+00	1983 PZ27	SZ	0.375	0.375	0.345	0.340	8%	9%	9%	MINOR
		WL	0.375	0.375	0.345	0.355	8%	5%	8%	MINOR
		MID	0.375	0.375	0.340	0.355	9%	5%	9%	MINOR
		ML	0.375	0.375	0.350	0.350	7%	7%	7%	MINOR
112+50	1983 PZ27	SZ	0.375	0.375	0.345	0.340	8%	9%	9%	MINOR
		WL	0.375	0.375	0.345	0.355	8%	5%	8%	MINOR
		MID	0.375	0.375	0.350	0.355	7%	5%	7%	MINOR
		ML	0.375	0.375	0.350	0.355	7%	5%	7%	MINOR
113+00	1983 PZ27	SZ	0.375	0.375	0.350	0.300	7%	20%	20%	MODERATE
		WL	0.375	0.375	0.345	0.350	8%	7%	8%	MINOR
		MID	0.375	0.375	0.345	0.350	8%	7%	8%	MINOR
		ML	0.375	0.375	0.340	0.350	9%	7%	9%	MINOR
113+50	1983 PZ27	SZ	0.375	0.375	0.345	0.340	8%	9%	9%	MINOR
		WL	0.375	0.375	0.345	0.345	8%	8%	8%	MINOR
		MID	0.375	0.375	0.350	0.350	7%	7%	7%	MINOR
		ML	0.375	0.375	0.345	0.345	8%	8%	8%	MINOR
114+00	1983 PZ27	SZ	0.375	0.375	0.345	0.345	8%	8%	8%	MINOR
		WL	0.375	0.375	0.340	0.350	9%	7%	9%	MINOR
		MID	0.375	0.375	0.345	0.355	8%	5%	8%	MINOR
		ML	0.375	0.375	0.340	0.350	9%	7%	9%	MINOR
114+50	1983 PZ27	SZ	0.375	0.375	0.345	0.345	8%	8%	8%	MINOR
		WL	0.375	0.375	0.350	0.355	7%	5%	7%	MINOR
		MID	0.375	0.375	0.345	0.355	8%	5%	8%	MINOR
		ML	0.375	0.375	0.345	0.345	8%	8%	8%	MINOR
115+00	1983 PZ27	SZ	0.375	0.375	0.345	0.340	8%	9%	9%	MINOR
		WL	0.375	0.375	0.340	0.345	9%	8%	9%	MINOR
		MID	0.375	0.375	0.335	0.345	11%	8%	11%	MINOR
		ML	0.375	0.375	0.355	0.340	5%	9%	9%	MINOR

*Due to limited construction documentation, original thickness shown are estimated and/or approximated from readings in intact areas where possible.

Abbreviations: WL = Water Line; SZ = Splash zone; Mid = Mid-pile; ML = Mudline

By: DTG Date: 3/25/22 Project: Port of Palacios Waterfront Inspection

Check: CTC Date: 3/25/22 Subject: Steel Sheetpile Bulkheads

Reading Location	Year of Construction & Assumed Shape	Elevation	Original Thickness (in.)*		Recorded Thickness		Loss (%)		Max. Loss (%)	Rating (based on UT)
			W (in.)	F (in.)	UT W (in.)	UT F (in.)	W	F		
115+50	1983 PZ27	SZ	0.375	0.375	0.345	0.340	8%	9%	9%	MINOR
		WL	0.375	0.375	0.345	0.345	8%	8%	8%	MINOR
		MID	0.375	0.375	0.350	0.345	7%	8%	8%	MINOR
		ML	0.375	0.375	0.345	0.350	8%	7%	8%	MINOR
116+00	1983 PZ27	SZ	0.375	0.375	0.375	0.375	0%	0%	0%	MINOR
		WL	0.375	0.375	0.345	0.350	8%	7%	8%	MINOR
		MID	0.375	0.375	0.360	0.360	4%	4%	4%	MINOR
		ML	0.375	0.375	0.350	0.355	7%	5%	7%	MINOR
116+50	1983 PZ27	SZ	0.375	0.375	0.350	0.350	7%	7%	7%	MINOR
		WL	0.375	0.375	0.350	0.355	7%	5%	7%	MINOR
		MID	0.375	0.375	0.355	0.355	5%	5%	5%	MINOR
		ML	0.375	0.375	0.355	0.350	5%	7%	7%	MINOR
117+00	1983 PZ27	SZ	0.375	0.375	0.350	0.355	7%	5%	7%	MINOR
		WL	0.375	0.375	0.355	0.365	5%	3%	5%	MINOR
		MID	0.375	0.375	0.365	0.365	3%	3%	3%	MINOR
		ML	0.375	0.375	0.365	0.365	3%	3%	3%	MINOR
117+50	1983 PZ27	SZ	0.375	0.375	0.365	0.355	3%	5%	5%	MINOR
		WL	0.375	0.375	0.360	0.360	4%	4%	4%	MINOR
		MID	0.375	0.375	0.365	0.355	3%	5%	5%	MINOR
		ML	0.375	0.375	0.355	0.355	5%	5%	5%	MINOR
118+00	1983 PZ27	SZ	0.375	0.375	0.350	0.315	7%	16%	16%	MODERATE
		WL	0.375	0.375	0.360	0.360	4%	4%	4%	MINOR
		MID	0.375	0.375	0.355	0.355	5%	5%	5%	MINOR
		ML	0.375	0.375	0.345	0.355	8%	5%	8%	MINOR
118+50	1983 PZ27	SZ	0.375	0.375	0.355	0.360	5%	4%	5%	MINOR
		WL	0.375	0.375	0.350	0.355	7%	5%	7%	MINOR
		MID	0.375	0.375	0.360	0.355	4%	5%	5%	MINOR
		ML	0.375	0.375	0.355	0.360	5%	4%	5%	MINOR
119+00	1983 PZ27	SZ	0.375	0.375	0.355	0.355	5%	5%	5%	MINOR
		WL	0.375	0.375	0.350	0.355	7%	5%	7%	MINOR
		MID	0.375	0.375	0.355	0.360	5%	4%	5%	MINOR
		ML	0.375	0.375	0.345	0.355	8%	5%	8%	MINOR
119+50	1983 PZ27	SZ	0.375	0.375	0.355	0.350	5%	7%	7%	MINOR
		WL	0.375	0.375	0.355	0.360	5%	4%	5%	MINOR
		MID	0.375	0.375	0.355	0.355	5%	5%	5%	MINOR
		ML	0.375	0.375	0.360	0.355	4%	5%	5%	MINOR
120+00	1983 PZ27	SZ	0.375	0.375	0.345	0.360	8%	4%	8%	MINOR
		WL	0.375	0.375	0.345	0.360	8%	4%	8%	MINOR
		MID	0.375	0.375	0.350	0.360	7%	4%	7%	MINOR
		ML	0.375	0.375	0.355	0.355	5%	5%	5%	MINOR

*Due to limited construction documentation, original thickness shown are estimated and/or approximated from readings in intact areas where possible.

Abbreviations: WL = Water Line; SZ = Splash zone; Mid = Mid-pile; ML = Mudline

APPENDIX C: COST ESTIMATES

COLLINS ENGINEERS

Client: Port of Palacios
Project: Above and Underwater Condition Assessment
Job No.: 38-13706.00
Prep. By: CTC Date: 3/29/2022
Chk/Rev. By: MJS Date: 4/12/2022

CONCEPTUAL COST ESTIMATES (25% COST ESTIMATE), LOW ESTIMATE

Item	Quantity	Unit	Unit Price	Construction Cost [1] Extended Price	Mob/ Demob %	Mob/ Demob Price	Engineering/ Planning %	Engineering/ Planning Price	Contingency % [5, 6]	Contingency Price	Total Cost	Priority [7]	Low Total
3+34 - 5+20, install new SSP bulkhead [2, 3]	186	LF	$3,000	$558,000	15%	$83,700	10%	$55,800	25%	$139,500	$837,000	3	$800,000
5+20 - 7+04, install concrete facing 3' below MLW to t/cap [4]	184	LF	$1,600	$294,400	15%	$44,160	10%	$29,440	25%	$73,600	$441,600	3	$400,000
7+04 - 14+85, install new SSP bulkhead [2]	781	LF	$3,000	$2,343,000	15%	$351,450	10%	$234,300	25%	$585,750	$3,514,500	3	$3,500,000
14+85-16+60, install concrete facing 3' below MLW to t/cap [4]	175	LF	$1,600	$280,000	15%	$42,000	10%	$28,000	25%	$70,000	$420,000	3	$400,000
24+79 - 31+90, concrete cap rehabilitation	711	LF	$300	$213,300	10%	$21,330	10%	$21,330	25%	$53,325	$309,285	4	$300,000
31+90 - 55+91, install concrete facing 3' below MLW to t/cap [4]	2401	LF	$1,600	$3,841,600	15%	$576,240	10%	$384,160	25%	$960,400	$5,762,400	3	$5,800,000
62+85 - 70+00, install concrete facing 3' below MLW to t/cap [4]	715	LF	$1,600	$1,144,000	15%	$171,600	10%	$114,400	25%	$286,000	$1,716,000	3	$1,700,000
97+50 - 120+50, install concrete facing 3' below MLW to t/cap [4]	2300	LF	$1,600	$3,680,000	15%	$552,000	10%	$368,000	25%	$920,000	$5,520,000	3	$5,500,000
Pier 1, discrete repair, hardware, sub/superstructure, deck, handrail, bracing	15000	SF	$10	$150,000	10%	$15,000	15%	$22,500	25%	$37,500	$225,000	4	$200,000
Pier 2, discrete repair, hardware, sub/superstructure, deck, handrail, bracing	1800	SF	$25	$45,000	10%	$4,500	15%	$6,750	25%	$11,250	$67,500	1	$70,000
Pier 3, discrete repair, hardware, sub/superstructure, deck, handrail, bracing	1800	SF	$25	$45,000	10%	$4,500	15%	$6,750	25%	$11,250	$67,500	1	$70,000
Pier 4, discrete repair, hardware, sub/superstructure, deck, handrail, bracing	6500	SF	$10	$65,000	10%	$6,500	15%	$9,750	25%	$16,250	$97,500	1	$100,000
Pier 5, discrete repair, hardware, sub/superstructure, deck, handrail, bracing	2500	SF	$25	$62,500	10%	$6,250	15%	$9,375	25%	$15,625	$93,750	1	$90,000
Remove and replace dilapidated pier at west side of marine railway, TB#1	500	SF	$150	$75,000	15%	$11,250	15%	$11,250	25%	$18,750	$116,250	2	$120,000
Remove and replace pier at east side of marine railway, TB#1	500	SF	$150	$75,000	15%	$11,250	15%	$11,250	25%	$18,750	$116,250	2	$120,000
										Construction Cost Estimate Subtotal	**$19,310,000**		**$19,300,000**

Assumptions and Notes:
1. Prices derived from Collins' project experience and average low bid unit prices published by TXDOT.
2. New steel sheet pile (SSP) are estimated to be 35' long PZ27.
3. New SSP replacement sections assume that the existing tie-back system can be re-used.
4. Concrete facing repair for SSP bulkheads assumes an 8' average repair height, accounting for a 5' reveal and 3' below MLW.
5. Contingency accounts for uncertainty regarding the conceptual stage of the design development.
6. Contingency accounts for incidental/miscellaneous work, such as removal and replacement of existing fender systems, and discrete repairs to the existing tie-back system.
7. 1 = Immediate (6 months); 2 = Short term (2 years); 3 = Medium term (5 years); 4 = Long term (10 years)

COLLINS ENGINEERS

Client: Port of Palacios
Project: Above and Underwater Condition Assessment
Job No.: 38-13706.00
Prep. By: CTC Date: 3/29/2022
Chk/Rev. By: MJS Date: 4/12/2022

CONCEPTUAL COST ESTIMATES (25% COST ESTIMATE), HIGH ESTIMATE

Item	Quantity	Unit	Unit Price	Construction Cost [1] Extended Price	Mob/ Demob %	Mob/ Demob Price	Engineering/ Planning %	Engineering/ Planning Price	Contingency % [5, 6]	Contingency Price	Total Cost	Priority [7]	High Total
3+34 - 5+20, install new SSP bulkhead [2, 3]	186	LF	$3,000	$558,000	15%	$83,700	10%	$55,800	25%	$139,500	$837,000	3	$800,000
5+20 - 7+04, install new SSP bulkhead [2, 3]	184	LF	$3,000	$552,000	15%	$82,800	10%	$55,200	25%	$138,000	$828,000	3	$800,000
7+04 - 14+85, install new SSP bulkhead [2]	781	LF	$3,000	$2,343,000	15%	$351,450	10%	$234,300	25%	$585,750	$3,514,500	2	$3,500,000
14+85-16+60, install new SSP bulkhead [2, 3]	175	LF	$3,000	$525,000	15%	$78,750	10%	$52,500	25%	$131,250	$787,500	3	$800,000
24+79 - 31+90, concrete cap rehabilitation	711	LF	$300	$213,300	10%	$21,330	10%	$21,330	25%	$53,325	$309,285	4	$300,000
31+90 - 55+91, install new SSP bulkhead [2, 3]	2401	LF	$3,000	$7,203,000	15%	$1,080,450	10%	$720,300	25%	$1,800,750	$10,804,500	3	$10,800,000
62+85 - 70+00, install new SSP bulkhead [2, 3]	715	LF	$3,000	$2,145,000	15%	$321,750	10%	$214,500	25%	$536,250	$3,217,500	3	$3,200,000
97+50 - 120+50, install new SSP bulkhead [2, 3]	2300	LF	$3,000	$6,900,000	15%	$1,035,000	10%	$690,000	25%	$1,725,000	$10,350,000	3	$10,400,000
Pier 1, discrete repair, hardware, sub/superstructure, deck, handrail, bracing	15000	SF	$10	$150,000	10%	$15,000	15%	$22,500	25%	$37,500	$225,000	4	$200,000
Pier 2, discrete repair, hardware, sub/superstructure, deck, handrail, bracing	1800	SF	$25	$45,000	10%	$4,500	15%	$6,750	25%	$11,250	$67,500	1	$70,000
Pier 3, discrete repair, hardware, sub/superstructure, deck, handrail, bracing	1800	SF	$25	$45,000	10%	$4,500	15%	$6,750	25%	$11,250	$67,500	1	$70,000
Pier 4, discrete repair, hardware, sub/superstructure, deck, handrail, bracing	6500	SF	$10	$65,000	10%	$6,500	15%	$9,750	25%	$16,250	$97,500	1	$100,000
Pier 5, discrete repair, hardware, sub/superstructure, deck, handrail, bracing	2500	SF	$25	$62,500	10%	$6,250	15%	$9,375	25%	$15,625	$93,750	1	$90,000
Remove and replace dilapidated pier at west side of marine railway, TB#1	500	SF	$150	$75,000	15%	$11,250	15%	$11,250	25%	$18,750	$116,250	2	$120,000
Remove and replace pier at east side of marine railway, TB#1	500	SF	$150	$75,000	15%	$11,250	15%	$11,250	25%	$18,750	$116,250	2	$120,000
										Construction Cost Estimate Subtotal	**$31,440,000**		**$31,400,000**

Assumptions and Notes:
1. Prices derived from Collins' project experience and average low bid unit prices published by TXDOT.
2. New steel sheet pile (SSP) are estimated to be 35' long PZ27.
3. New SSP replacement sections assume that the existing tie-back system can be re-used.
4. Concrete facing repair for SSP bulkheads assumes an 8' average repair height, accounting for a 5' reveal and 3' below MLW.
5. Contingency accounts for uncertainty regarding the conceptual stage of the design development.
6. Contingency accounts for incidental/miscellaneous work, such as removal and replacement of existing fender systems, and discrete repairs to the existing tie-back system.
7. 1 = Immediate (6 months); 2 = Short term (2 years); 3 = Medium term (5 years); 4 = Long term (10 years)

Lucinda Lessley
Acting Administrator, MARAD
1200 New Jersey Ave, SE
Washington, D.C. 20590

Dear Acting Administrator Lessley,

I am writing to support the Port of Palacios' Maritime Administration's Port Infrastructure Development Program (PIDP) grant application for the reconstruction of turning basins 1 and 2 which includes shore power stations.

Devall Towing is not a tenant of the Port; however, we operate all along the Gulf Coast and have operations in the Matagorda Bay region. We have looked at Palacios as a place of safe harbor in the past because having a place is paramount in our industry. As the Port of Palacios creates a sustainable and resilient turning basin, we can use that new structurally sound infrastructure to berth vessels in the event of storms and hurricanes. Currently, an inland harbor with shore power and structurally reliable berths do not exist as an option for us. The improvements proposed in the Port's PIDP application creates and opportunity for us and other shallow water operators in the tug and barge industry.

As a maritime operator along the Gulf Coast, Devall Towing is pleased to offer our support for the Port of Palacios' 2022 PIDP grant application.

Sincerely,

David C Devall

VP of Personnel, Port Captain,Training and Fleeting

Office: (337) 905-3500

Mobile: (337) 302-8009

AEP TEXAS
An AEP Company
BOUNDLESS ENERGY™

May 2, 2022

Lucinda Lessley
Acting Administrator
1200 New Jersey Ave, SE
Washington, D.C. 20590

Dear Acting Administrator Lessley,

I am writing on behalf of **AEP Texas** in support of the Port of Palacios' Maritime Administration's Port Infrastructure Development Program (PIDP) grant application for the reconstruction of turning basins 1 and 2 which includes shore power stations.

The project consists of reconstructing and rehabilitating approximately 1 mile of bulkhead spanning 2 turning basins and providing several critically needed shore power stations to eliminate greenhouse gas emissions in the harbor and City of Palacios. The project will provide the following benefits:

- Reduction in greenhouse gas emissions
- Resilient port infrastructure
- Capacity for larger vessels and tugs
- Opportunities for economic development

AEP Texas is pleased to offer support for the Port of Palacios' 2022 PIDP grant application. Thank you for your consideration and please do not hesitate to reach out to my office if I can provide any assistance.

Sincerely,

Vee Strauss
AEP Texas, External Affairs Manager
2901 E Mockingbird Lane
Victoria, Texas 77904
(office) 361-574-2236/ (cell) 361-920-5943
svstrauss@aep.com

MATAGORDA COUNTY

NATE MCDONALD
COUNTY JUDGE

May 6, 2022

Lucinda Lessley
Acting Administrator
1200 New Jersey Ave, SE
Washington, D.C. 20590

Dear Acting Administrator Lessley,

I am writing to support the Port of Palacios' Maritime Administration's Port Infrastructure Development Program (PIDP) grant application for the reconstruction of turning basins 1 and 2 which includes shore power stations.

The project consists of reconstructing and rehabilitating approximately 1 mile of bulkhead spanning 2 turning basins and providing several critically needed shore power stations to eliminate greenhouse gas emissions in the harbor and City of Palacios. The project will provide the following benefits:

- Reduction in greenhouse gas emissions
- Resilient port infrastructure
- Capacity for larger vessels and tugs
- Opportunities for economic development

I am pleased to offer my support for the Port of Palacios' 2022 PIDP grant application. Thank you for your consideration and please do not hesitate to reach out to my office if I can provide any assistance.

Sincerely,

Nate McDonald

Nate McDonald
County Judge
Matagorda County

1700 Seventh Street, Room 301 • Bay City, TX 77414 • (979) 244-7605 • Fax (979) 245-3697

May 6, 2022

Lucinda Lessley

Acting Administrator

1200 New Jersey Ave, SE

Washington, D.C. 20590

Dear Acting Administrator Lessley,

I am writing to support the Port of Palacios' Maritime Administration's Port Infrastructure Development Program (PIDP) grant application for the reconstruction of turning basins 1 and 2 which includes shore power stations.

The project consists of reconstructing and rehabilitating approximately 1 mile of bulkhead spanning 2 turning basins and providing several critically needed shore power stations to eliminate greenhouse gas emissions in the harbor and City of Palacios. The project will provide the following benefits:

- Reduction in greenhouse gas emissions
- Resilient port infrastructure
- Capacity for larger vessels and tugs
- Opportunities for economic development

I am pleased to offer my support for the Port of Palacios' 2022 PIDP grant application. Thank you for your consideration and please do not hesitate to reach out to my office if I can provide any assistance.

Sincerely,

Alfred Aparicio
Azteca Shrimp Company
361-935-4502

May 6, 2022

Lucinda Lessley

Acting Administrator

1200 New Jersey Ave, SE

Washington, D.C. 20590

Dear Acting Administrator Lessley,

I am writing to support the Port of Palacios' Maritime Administration's Port Infrastructure Development Program (PIDP) grant application for the reconstruction of turning basins 1 and 2 which includes shore power stations.

The project consists of reconstructing and rehabilitating approximately 1 mile of bulkhead spanning 2 turning basins and providing several critically needed shore power stations to eliminate greenhouse gas emissions in the harbor and City of Palacios. The project will provide the following benefits:

- Reduction in greenhouse gas emissions
- Resilient port infrastructure
- Capacity for larger vessels and tugs
- Opportunities for economic development

I am pleased to offer my support for the Port of Palacios' 2022 PIDP grant application. Thank you for your consideration and please do not hesitate to reach out to my office if I can provide any assistance.

Sincerely,

Thuy Vu
Capt. Tom's Enterprises
361-660-9277

May 6, 2022

Lucinda Lessley

Acting Administrator

1200 New Jersey Ave, SE

Washington, D.C. 20590

Dear Acting Administrator Lessley,

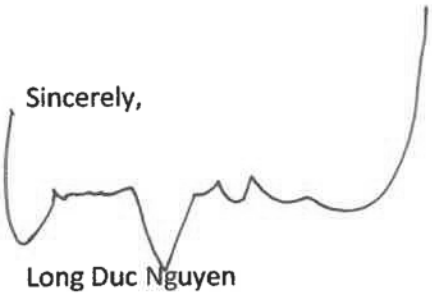
I am writing to support the Port of Palacios' Maritime Administration's Port Infrastructure Development Program (PIDP) grant application for the reconstruction of turning basins 1 and 2 which includes shore power stations.

The project consists of reconstructing and rehabilitating approximately 1 mile of bulkhead spanning 2 turning basins and providing several critically needed shore power stations to eliminate greenhouse gas emissions in the harbor and City of Palacios. The project will provide the following benefits:

- Reduction in greenhouse gas emissions
- Resilient port infrastructure
- Capacity for larger vessels and tugs
- Opportunities for economic development

I am pleased to offer my support for the Port of Palacios' 2022 PIDP grant application. Thank you for your consideration and please do not hesitate to reach out to my office if I can provide any assistance.

Sincerely,



Long Duc Nguyen
Domino Seafood
361-648-5787

GAR SHRIMP CORPORATION
1405 MAIN STREET
PALACIOS, TEXAS 77465
361-972-6222
garshrimp@tisd.net

May 6, 2022

Lucinda Lessley

Acting Administrator

1200 New Jersey Ave, SE

Washington, D.C. 20590

Dear Acting Administrator Lessley,

I am writing to support the Port of Palacios' Maritime Administration's Port Infrastructure Development Program (PIDP) grant application for the reconstruction of turning basins 1 and 2 which includes shore power stations.

The project consists of reconstructing and rehabilitating approximately 1 mile of bulkhead spanning 2 turning basins and providing several critically needed shore power stations to eliminate greenhouse gas emissions in the harbor and City of Palacios. The project will provide the following benefits:

- Reduction in greenhouse gas emissions
- Resilient port infrastructure
- Capacity for larger vessels and tugs
- Opportunities for economic development

I am pleased to offer my support for the Port of Palacios' 2022 PIDP grant application. Thank you for your consideration and please do not hesitate to reach out to my office if I can provide any assistance.

Sincerely,

Joseph Garcia

President

Gar Shrimp Corp.

361-972-6222

May 6, 2022

Lucinda Lessley

Acting Administrator

1200 New Jersey Ave, SE

Washington, D.C. 20590

Dear Acting Administrator Lessley,

I am writing to support the Port of Palacios' Maritime Administration's Port Infrastructure Development Program (PIDP) grant application for the reconstruction of turning basins 1 and 2 which includes shore power stations.

The project consists of reconstructing and rehabilitating approximately 1 mile of bulkhead spanning 2 turning basins and providing several critically needed shore power stations to eliminate greenhouse gas emissions in the harbor and City of Palacios. The project will provide the following benefits:

- Reduction in greenhouse gas emissions
- Resilient port infrastructure
- Capacity for larger vessels and tugs
- Opportunities for economic development

I am pleased to offer my support for the Port of Palacios' 2022 PIDP grant application. Thank you for your consideration and please do not hesitate to reach out to my office if I can provide any assistance.

Sincerely,

Anthony P. Garcia
Garcia Trawlers
361-646-4724

May 6, 2022

Lucinda Lessley

Acting Administrator

1200 New Jersey Ave, SE

Washington, D.C. 20590

Dear Acting Administrator Lessley,

I am writing to support the Port of Palacios' Maritime Administration's Port Infrastructure Development Program (PIDP) grant application for the reconstruction of turning basins 1 and 2 which includes shore power stations.

The project consists of reconstructing and rehabilitating approximately 1 mile of bulkhead spanning 2 turning basins and providing several critically needed shore power stations to eliminate greenhouse gas emissions in the harbor and City of Palacios. The project will provide the following benefits:

- Reduction in greenhouse gas emissions
- Resilient port infrastructure
- Capacity for larger vessels and tugs
- Opportunities for economic development

I am pleased to offer my support for the Port of Palacios' 2022 PIDP grant application. Thank you for your consideration and please do not hesitate to reach out to my office if I can provide any assistance.

Sincerely,

John Huynh
Palacios Shrimp Co.
281-623-9969

May 6, 2022

Lucinda Lessley

Acting Administrator

1200 New Jersey Ave, SE

Washington, D.C. 20590

Dear Acting Administrator Lessley,

I am writing to support the Port of Palacios' Maritime Administration's Port Infrastructure Development Program (PIDP) grant application for the reconstruction of turning basins 1 and 2 which includes shore power stations.

The project consists of reconstructing and rehabilitating approximately 1 mile of bulkhead spanning 2 turning basins and providing several critically needed shore power stations to eliminate greenhouse gas emissions in the harbor and City of Palacios. The project will provide the following benefits:

- Reduction in greenhouse gas emissions
- Resilient port infrastructure
- Capacity for larger vessels and tugs
- Opportunities for economic development

I am pleased to offer my support for the Port of Palacios' 2022 PIDP grant application. Thank you for your consideration and please do not hesitate to reach out to my office if I can provide any assistance.

Sincerely,

Kenneth Garcia
Quality Seafood
361-972-2720

May 6, 2022

Lucinda Lessley

Acting Administrator

1200 New Jersey Ave, SE

Washington, D.C. 20590

Dear Acting Administrator Lessley,

I am writing to support the Port of Palacios' Maritime Administration's Port Infrastructure Development Program (PIDP) grant application for the reconstruction of turning basins 1 and 2 which includes shore power stations.

The project consists of reconstructing and rehabilitating approximately 1 mile of bulkhead spanning 2 turning basins and providing several critically needed shore power stations to eliminate greenhouse gas emissions in the harbor and City of Palacios. The project will provide the following benefits:

- Reduction in greenhouse gas emissions
- Resilient port infrastructure
- Capacity for larger vessels and tugs
- Opportunities for economic development

I am pleased to offer my support for the Port of Palacios' 2022 PIDP grant application. Thank you for your consideration and please do not hesitate to reach out to my office if I can provide any assistance.

Sincerely,

Owner: Tres Palacios Seafood

Office Phone: 361-972-3713

Palacios Shipyard
PO Box 590
Palacios TX 77465

May 6, 2022

Lucinda Lessley
Acting Administrator, MARAD
1200 New Jersey Ave, SE
Washington, D.C. 20590

Dear Acting Administrator Lessley,

I am writing to support the Port of Palacios' Maritime Administration's Port Infrastructure Development Program (PIDP) grant application for the reconstruction of turning basins 1 and 2 which includes shore power stations.

As a tenant of the Port, the improvements at Turning Basin 1 will provide economic opportunities to our company. With the shore power capabilities and increased structural capacity to mooring vessels, we can repair small barges and tugs which would result in potentially 10 new jobs and 10 saved jobs over the next 9 years. Furthermore, as the increased capacity expands the opportunities to repair an expanded fleet of vessels, we envision investing over $500,000 in that same 9 year period.

As a long-standing port tenant, we are pleased to offer our support for the Port of Palacios' 2022 PIDP grant application.

Sincerely,

MICHAEL CLOUD
27TH DISTRICT, TEXAS

COMMITTEE ON AGRICULTURE

COMMITTEE ON OVERSIGHT AND REFORM

RANKING MEMBER,
ECONOMIC AND CONSUMER POLICY SUBCOMMITTEE

Congress of the United States
House of Representatives
Washington, DC 20515

555 N. CARANCAHUA ST.
TOWER II, SUITE 980
CORPUS CHRISTI, TX 78401
(361) 884-2222

111 N. GLASS ST., SUITE 102
VICTORIA, TX 77901
(361) 894-6446

512 CANNON HOB
WASHINGTON, DC 20515
(202) 225-7742

CLOUD.HOUSE.GOV

April 29, 2022

The Honorable Lucinda Lessley
Acting Administrator
Maritime Administration
U.S. Department of Transportation
1200 New Jersey Avenue, SE
Washington, DC 20590

Dear Acting Administrator Lessley:

As the Congressman for the 27th Congressional District of Texas, I am writing to support the Port of Palacios' Maritime Administration's Port Infrastructure Development Program (PIDP) grant application for the reconstruction of turning basins 1 and 2, which includes shore power stations.

The project consists of reconstructing and rehabilitating approximately 1 mile of bulkhead spanning 2 turning basins and providing several critically needed shore power stations to reduce greenhouse gas emissions in the harbor and the City of Palacios. The project will provide the following benefits:

- Reduction in greenhouse gas emissions
- Resilient port infrastructure
- Capacity for larger vessels and tugs
- Opportunities for economic development

Thank you in advance for your full and fair consideration of the Port of Palacios' 2022 PIDP grant application. Please do not hesitate to reach out to my office if I can answer any questions or be of further assistance.

Sincerely,

Michael Cloud
Member of Congress
27th Congressional District of Texas

CODY VASUT

TEXAS HOUSE OF REPRESENTATIVES
District 25

May 9, 2022

The Honorable Lucinda Lessley
Acting Administrator
Maritime Administration
U.S. Department of Transportation
1200 New Jersey Ave, SE
Washington, D.C. 20590

RE: Matagorda County Navigation District #1 Port of Palacios - Letter of Support for Maritime Administration Port Infrastructure Development Program (PIDP) Grant

Dear Acting Administrator Lessley,

As the State Representative of House District 25 representing Matagorda County, Texas, I am writing this letter in support for a Federal Grant through the Maritime Administration that will help the Port of Palacios install Shore Power (which allows the boats to hook into electrical grid, versus running their diesel burning generators/engines to power their boat while tied up in our Port), so this is a Green Initiative. Also, it will allow them to do some major repairs to their old docks so they can be safer and more resilient. This is especially important because when there are Storms in the Gulf most of the Shrimping Fleet uses their Port as a Port of Refuge/Safe Harbor. Their goal has always been to continue have a Safe Harbor Port for the industry.

Additionally, their small Repair Shipyard has been the primary repair site for the Port Aransas TXDOT Ferries. Each year their shipyard handles two to three Ferry repairs for TXDOT. They are asking for the Small Port, Small Project of the PIDP Grant so their grant request will not exceed $11,250,000. The project consists of reconstructing and rehabilitating approximately 1 mile of bulkhead spanning 2 turning basins and providing several critically needed shore power stations to eliminate greenhouse gas emissions in the harbor and City of Palacios. The project will provide the following benefits: Reduction in greenhouse gas emissions; resilient port infrastructure; capacity for larger vessels and tugs; and opportunities for economic development.

These planned improvements would definitely be an asset. I am pleased to offer my support for the Port of Palacios 2022 PIDP grant application and would appreciate your consideration of the Maritime Administration Port Infrastructure Development Program (PIDP) Grant. Please do not hesitate to contact me if you have any questions or concerns.

Sincerely,

Cody Thane Vasut
House Representative District 25

CAPITOL: P.O. BOX 2910 • AUSTIN, TEXAS 78768-2910 • *phone* (512) 463-0564
DISTRICT: 222 NORTH VELASCO STREET, SUITE 25 • ANGLETON, TEXAS 77515 • *phone* (979) 848-1770
CODY.VASUT@HOUSE.TEXAS.GOV

COMMITTEES:
HEALTH & HUMAN SERVICES, CHAIR
FINANCE
NATURAL RESOURCES & ECONOMIC DEVELOPMENT
TRANSPORTATION
WATER, AGRICULTURE & RURAL AFFAIRS

THE SENATE OF TEXAS

LOIS W. KOLKHORST
STATE SENATOR
DISTRICT 18

May 9, 2022

The Honorable Lucinda Lessley
Acting Administrator
Maritime Administration
U.S. Department of Transportation
1200 New Jersey Ave, SE
Washington, D.C. 20590

Dear Acting Administrator Lessley,

I am writing to support the Port of Palacios' Maritime Administration's Port Infrastructure Development Program (PIDP) grant application for the reconstruction of turning basins one and two, which includes shore power stations.

The project consists of reconstructing and rehabilitating approximately one mile of bulkhead spanning two turning basins and providing several critically needed shore power stations to eliminate greenhouse gas emissions in the harbor and City of Palacios. The project will provide the following benefits:

- Reduction in greenhouse gas emissions
- Resilient port infrastructure
- Capacity for larger vessels and tugs
- Opportunities for economic development

Thank you in advance for your time and support of this request.

Sincerely,

Senator Lois W. Kolkhorst
Texas Senate District 18

Port of Palacios

1602 Main Street
P.O. Box 551
Palacios, Texas 77465
Phone: 361-972-5556
Fax: 361-972-3584
Email: info@portofpalacios.com
Website: www.portofpalacios.com

Lucinda Lessley
Acting Administrator, MARAD
1200 New Jersey Ave, SE
Washington, D.C. 20590

May 09, 2022
File No.: 07-7922

Dear Acting Administrator Lessley,

As Executive Director of the Port of Palacios, I would request that as our small project, which is located in a rural, historically disadvantaged community at a small port, be considered for Federal participation greater than 80%. However, should the request be denied, I'm pleased to submit this letter to confirm my Delegation of Authority with a commitment of matching funds at a 20% non-federal cost share, for our application to the FY22 U.S. Department of Transportation Maritime Administration's Port Infrastructure Development Program Grant for the **Energy & Resilience Improvement Project** at the Port of Palacios.

If your agency has any questions regarding this local commitment of funds, please do not hesitate to contact my office.

Sincerely,

Victor Martinez
Executive Director
Matagorda County Navigation District No. 1 dba Port of Palacios

MARITIME ADMINISTRATION
AMERICAN RECOVERY AND REINVESTMENT ACT FUNDING
Environmental Compliance Checklist

Background

The National Environmental Policy Act (NEPA), as amended (Public Law 91-190), protects public health, safety, and environmental quality by ensuring transparency, accountability, and public involvement in federal actions in the use of public funds. NEPA generally requires federal agencies to consider, document, and disclose the reasonably foreseeable environmental impacts of any proposed action and associated alternatives. Grants of federal funds typically implicate NEPA duties. To comply with NEPA, the Maritime Administration is required to complete environmental analyses prior to awarding grants.

The Maritime Administration has adopted formal NEPA implementing procedures. Among other things, these procedures will be used to determine whether a proposed action is categorically excluded or whether further environmental documentation will be necessary. Applicants are required to complete the following checklist as part of the Maritime Administration's NEPA analysis.

Environmental Compliance Checklist for Programs

The purpose of this checklist is to assist the Maritime Administration Grant Coordinator in determining what applicable environmental documentation is necessary under the Maritime Administration's Procedures for Considering Environmental Impacts (MAO 600-1) for proposed grant applications.

Many questions require a "yes" or "no" response. Please provide detailed description for responses and attach all necessary supporting documentation. Applicants should use the space provided to answer the questions. If the applicant needs additional space, additional pages may be attached to the questionnaire, indicating which question is being continued.

By answering the questions in this checklist, the Grant Coordinator can determine whether the award of the grant is categorically excluded from NEPA analysis, or whether further environmental documentation is required. This information is deemed necessary by the Maritime Administration in order to facilitate and complete its review of the application. If such information is not provided, the Maritime Administration may deem the application incomplete and cease processing it.

1. Provide a brief description of the proposed activity, including the grant/award recipient, geographical location, and scope of the project.

Matagorda County Navigation District No. 1.
Port of Palacios – Basins 1 & 2
City of Palacios, Matagorda County, TX

The Port of Palacios (Port) is seeking assistance through MARAD's Port Infrastructure Development Program. The Port is a 400-acre port in a rural area of Texas along the Gulf Intracoastal Waterway (GIWW). It is centrally located between Houston, Austin and San Antonio on the Central Texas Coast. It is an ideal location to access major highways and waterways. The Port is served by the GIWW via the Palacios Chanel, which is federally maintained at a width of 125-feet and depth of 14-feet. The harbor consists of four turning basins containing over 12,500 feet of bulkhead dock.

The Port is a public taxing entity; however, the Port's main source of revenue is generated by leasing fees. Since the early 1920's, the Port mainly serves the local shrimp and commercial fishing industry. As the turning basins were added and the shrimp fleet expanded, the number of boats topped 400 in the 1980's. In recent years there has been increased pressure on the fishing industry due to imported seafood, lower prices and higher fuel costs. In turn, the shrimp fleet has dwindled to approximately 200 boats; however, still the state's largest shrimp fleet. Despite the continuing economic pressures on the tradition of the seafood industry. Over 7 million tons of shrimp were landed at the Port in 2012.

In addition to long serving the seafood industry, the Port is home to two shipyards, both belonging to Palacios Shipyard. Services offered include repair, refit, fabrication, and dry dock, as well as new construction. Barge traffic is on the increase at the Port. The GIWW plays an integral part in the movement of cargo throughout the U.S. and bulk cargo transportation is the newest maritime enterprise to find a home at the Port. The Port's proximity to many large agricultural tracts and coastal development projects provide a cheap, safe and environmentally friendly method of transporting fertilizer, grain, gravel and other building materials to the area.

In efforts to diversify after the pandemic, the Port is exploring commercial opportunities for the following but not limited to:

> load/unload and staging of industrial and renewable energy equipment and materials, maritime services, and shipping in/out goods and products including, but not limited to, products related to: agriculture, petrochemical, oil and gas, aggregate and containers.

In order to continue serving the existing tenants and attract new tenant opportunities, an above and below structural assessment was conducted on approximately 12,000 LF of bulkhead of various construction and age, timber piers, and 2,200 feet of articulated concrete mat (ACM). The structural condition for all the docks and wharves located in wharves located in Turning Basins 1, 2, 3 and 4 were evaluated according to the waterfront engineering industry standards including American Society of Civil Engineers (ASCE) Manual Practice 130. This was performed by Collins Engineers, Inc. in April 2022.

The structural assessment results indicated an urgent need to replace the subsurface infrastructure at Turning Basin 1 & 2. The majority of Basin 2 is comprised of steel sheet pile bulkhead that was installed in the 1980's while Basin 1 is comprised of a mixture of sheet pile bulkhead (some installed in the 1980's and 2000's), concrete sheeting bulkhead, and timber sheeting bulkhead.

The proposed project includes the replacement/installation of XXXX-ft sheet pile bulkhead that will be installed using XYZ methods.

2. Describe the purpose and need of the proposed activity. If the proposal is a continuation of an on-going project, fully explain any changes in the purpose and need in relation to information gathered in previous years.

The is a shallow-draft barge port serving fishing vessels, shipyards, and cargo-oriented developments encompassing approximately 400 acres. The purpose of the project is to increase the volume of bulk transfer and storage capacities and attract new business that would provide job growth ……. The project is needed to support the existing tenants, as well as attract new tenants, by replacing aged subsurface infrastructure, improve current and future operations at the loading/unloading docks, improve the capacity to withstand the storm surge and wind gusts associated with hurricanes that are increasing in strength as climate change and sea-level rises along the Gulf Coast.…….

This project will enable the Port to better adapt to unexpected events such as sudden changes in capacity or throughput requirements caused by natural or human-made hazards, such as sea level rise, flooding, hurricane inundation or other extreme high-rain events, as well as decrease the supply chain bottlenecks/shortages.

3. Has any National Environmental Policy Act (NEPA) or other environmental compliance documentation (e.g., Endangered Species Act Biological Opinion; Letter of Concurrence or Biological Assessment/Evaluation; Clean Water Act permit; State Historic Preservation Officer consultation; state environmental compliance documentation) been completed? If yes, list the environmental compliance documentation that has been completed and provide copies of the documentation as appropriate.

The project site is located within the Port of Palacios. The proposed project replaces existing subsurface infrastructure that has outlived its service years. The footprint of the project will not change nor will the land use. Therefore, the level of review required under NEPA is a Categorical Exclusion (CE) subject to a statutory review. Through this environmental review, no significant impacts to natural and human environment were identified. Upon verification of the findings, the CE project could convert to exempt.

A Biological Assessment was obtained from the U.S. Fish & Wildlife Service through the Information for Planning and Consultation (IPaC). No impacts or critical habitat were identified. Please see attachment.

4. Is a state environmental policy act compliance document required? If yes, state when this document was completed or will be completed and identify who is preparing the document. Copies will need to be provided, as necessary.

No.

5. Would the proposed activity or environmental impacts of the activity be highly controversial? If yes, describe the potential controversy.

No.

6. Would the proposed activity have potential environmental impacts that are highly uncertain or involve unique or unknown risks? If yes, describe the impacts that are uncertain or involve unique or unknown risks.

No.

7. Is the proposed activity related to other activities that together may cumulatively adversely impact the environment? For example, the proposed activity is one of a series of projects that together may cause a change in the pattern of pollutant discharge, traffic generation, economic change, flood plain change, or land use. If yes, briefly describe the other activities and discuss how the related projects would have cumulative impacts on the environment.

No.

8. Would the proposed activity involve dredging, excavation, or placement of fill? If yes, describe the activity and how it will be conducted.

The Port is regularly maintenance dredged; therefore, no dredging will be required to replace the bulkheads. The proposed project may involve the placement of clean fill material where erosion has occurred or riprap to support the base of the new sheet pile bulkheads. Best management practices will be used during construction to uphold water quality standards.

9. Would the proposed activity occur within a unique geographic area of notable recreational, ecological, scientific, cultural, historical, scenic, or aesthetic importance? If yes, describe the area, including the name or designation, if known.

No. No activity will occur within a unique geographic area listed above. This is an existing Port facility under the jurisdictional of the U.S. Army Corps of Engineers (Corps) – Galveston District. A Nationwide Permit or General Permit for maintenance may be required for the proposed replacement of the faltering infrastructure.

10. Would the proposed activity affect districts, sites, highways, structures, or objects listed in or eligible for listing in the National Register of Historic Places or cause loss or destruction of significant scientific, cultural, or historical resources? If yes, describe the impact. Explain whether and how it was determined if any of those properties had the potential to be impacted within the affected area.

No. A Cultural Resources Survey or Standing Structure Survey was not performed during this review. However, a Corps permit obtained by the Matagorda County Navigation District No. 1 for Turning Basin #4 (labeled as #1 in the maps provided) stated "No Effect" on historic or cultural resources federally issued on May 27, 2010. This project does not impact resources protected under Section 106 of the National Historic Preservation Act.

DA Number:	SWG-2002-00167
Project Name:	Matagorda County Navigation District No. 1 - Permit No: 16279(04) - Turning Basin # 4 - Tres Palacios Bay
Applicant	Matagorda County Navigation District No. 1
District:	Galveston

History of Actions:

Permit Type:	Standard Permit
Public Notice Date:	03-NOV-2009
Action Taken:	Issued With Special Conditions
Date Issued/Denied:	05/27/2010
Federally Complete:	10/26/2009

Subactions:

Section 106 of the NHPA

Begin Date:	2009-10-28
End Date:	2009-12-03
Effects Determination:	No Effect

National Register of Historic Places listings in Matagorda County, Texas, can be found at: https://en.wikipedia.org/wiki/National_Register_of_Historic_Places_listings_in_Matagorda_County,_Texas

11. Will this action affect a species listed or proposed to be listed as Endangered or Threatened?

No. A Biological Assessment was obtained from the U.S. Fish & Wildlife Service through the Information for Planning and Consultation (IPaC). No impacts or critical habitat were identified. Please see attachment.

12. List any federal, state, or local permits, authorizations, or waivers that would be required to complete the proposed activity. Provide the date the permit, authorization, or waiver was obtained or will be obtained. Provide copies of the

permit, authorization, or waiver as appropriate. Was a NEPA analysis prepared for the permit, authorization, or waiver? If yes, state the title of the NEPA analysis and provide copies of the NEPA analysis.

Potential permits that may be required to complete the proposed activity:

Nationwide or General Permit from Corps

Stormwater Permit for Construction > than 5 acres – Texas Council of Environmental Quality

13. Is there the potential for the proposed activity to cause changes that would be different from normal ambient conditions (e.g., temperature, light, turbidity, noise, other human activity levels, etc.)? If yes, describe the changes and the circumstances that would cause these changes.

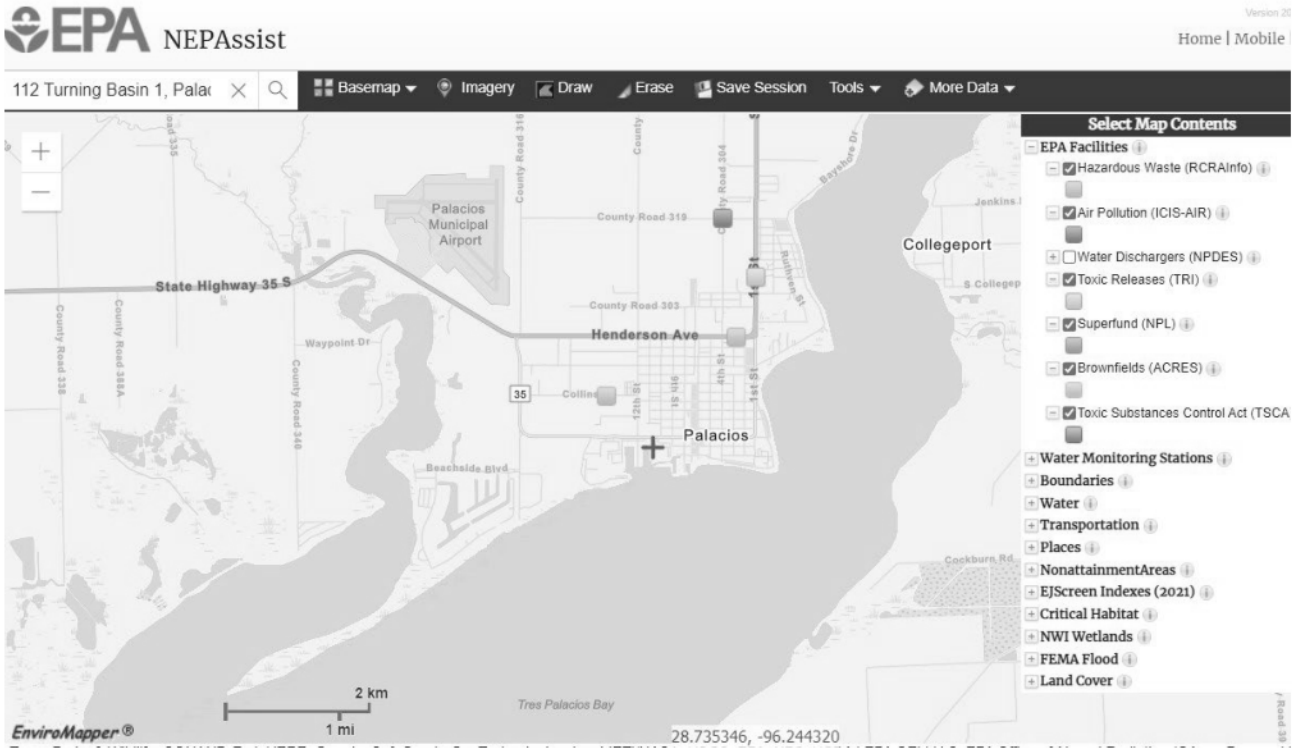
No.

14. Is there potential for any foreign substance (e.g., chemicals, antibiotics, pathogens, etc.) to be introduced into the environment? If yes, describe the foreign substance; how the foreign substance is being used; why the substance is being used; and measures that will be taken to prevent or limit its introduction into the environment.

No.

15. Would the proposed activity involve the risk of human or environmental exposure to toxic or hazardous substances? If yes, describe the substance; how the substance is being used; why the substance is being used; the risk of human or environmental exposure; and measures that will be taken to prevent or limit human or environmental exposure.

No. There are no toxic or hazardous substances site located in the Port system that regulated by the U.S. Environmental Protection Agency's programs.



16. Would the proposed activity affect public health or safety (e.g., change to water supply, change to water table, wastewater disposal, etc.)? The effects may be adverse or beneficial and temporary, long-term, or permanent. If yes, describe the effects and the circumstances that would cause these impacts.

No.

17. Would the proposed activity change stormwater flow, air quality, noise levels, or traffic patterns? The changes may be adverse or beneficial and temporary, long-term, or permanent. If yes, describe the changes and the circumstances that would cause these changes.

There may be a temporary rise in the ambient air and noise levels during construction activities; however, nothing significant and long-term.

No significant impacts to traffic patterns are anticipated. Maritime traffic would potentially be beneficial due to decrease in idle time due to increase in available, working dock space, which also has a net benefit to air quality due to lower emissions.

18. Would the proposed activity result in changing the use of park lands, prime farmland, and/or floodplains? The changes may be adverse or beneficial and temporary, long-term, or permanent. If yes, describe the changes and the circumstances that would cause these changes.

The project does not change the land use of park lands or prime farmlands protected by 4(f) or Farmland Protection Policy Act. The project is located within a marine system that does not impact the floodplain.

19. Would the proposed activity have social or economic impacts? The impacts may be adverse or beneficial and temporary, long-term, or permanent. If yes, describe the impacts and the circumstances that would cause these changes.

No.

20. Would the proposed activity cause an existing habitat (terrestrial or aquatic) to be altered (e.g., tidal flow, sediments, water depth, water quality, turbidity, current, temperature, etc.)? The changes may be adverse or beneficial and temporary, long-term, or permanent. If yes, describe the potential changes and the circumstances that would cause these changes. Discuss if these changes extend beyond the immediate project area.

No.

Texas Department of Transportation

125 EAST 11TH STREET, AUSTIN, TEXAS 78701-2483 | 512.463.8588 | WWW.TXDOT.GOV

May 13, 2022

The Honorable Pete Buttigieg
Secretary of Transportation
U.S. Department of Transportation
1200 New Jersey Avenue, SE
Washington, DC 20590

Re: Port of Palacios' Port Infrastructure Development Program (PIDP) Grant Application

Dear Secretary Buttigieg:

The Texas Department of Transportation (TxDOT) is pleased to support the Port of Palacios' 2022 Port Infrastructure Development Program (PIDP) grant application.

The project consists of reconstructing and rehabilitating approximately one mile of bulkhead spanning two turning basins (turning basins one and two) and providing several critically needed shore power stations to eliminate greenhouse gas emissions in the harbor and City of Palacios.

In addition to reducing emissions, the proposed project seeks to increase port resiliency and allow capacity for larger vessels and tugs with an overall goal of increasing opportunities for economic development. As TxDOT continues to provide ferry services, we recognize the important role the Port of Palacios' shipyard repair and maintenance operations provide to the state's multimodal network.

TxDOT appreciates the opportunity to support the Port of Palacios' PIDP grant application, and we thank you for your consideration. If you have any questions, please call me at (512) 305-9515 or you or your staff may contact Melanie Alvord, Director, Federal Affairs, at Melanie.Alvord@txdot.gov or at (512) 944-5135.

Sincerely,

Marc D. Williams, P.E.
Executive Director

cc: Victor Martinez Jr., Port Director, Port of Palacios
GeirEilif Kalhagen, Director, Maritime Division, TxDOT
Melanie A. Alvord, Director, Federal Affairs, TxDOT

ATTACHMENTS FORM

Instructions: On this form, you will attach the various files that make up your grant application. Please consult with the appropriate Agency Guidelines for more information about each needed file. Please remember that any files you attach must be in the document format and named as specified in the Guidelines.

Important: Please attach your files in the proper sequence. See the appropriate Agency Guidelines for details.

1) Please attach Attachment 1	1234-No 1 Project Narrative P	Add Attachment	Delete Attachment	View Attachment
2) Please attach Attachment 2	1235-No 2 - BCA-ERIP.xlsx	Add Attachment	Delete Attachment	View Attachment
3) Please attach Attachment 3	1236-No 3 - Waterfront Inspec	Add Attachment	Delete Attachment	View Attachment
4) Please attach Attachment 4	1237-No 4 - Letters of Suppor	Add Attachment	Delete Attachment	View Attachment
5) Please attach Attachment 5	1238-No 5 - Palacios - Funds	Add Attachment	Delete Attachment	View Attachment
6) Please attach Attachment 6	1239-No 6 - Palacois NEPA che	Add Attachment	Delete Attachment	View Attachment
7) Please attach Attachment 7	1240-No 7 - TXDOT letter of s	Add Attachment	Delete Attachment	View Attachment
8) Please attach Attachment 8		Add Attachment	Delete Attachment	View Attachment
9) Please attach Attachment 9		Add Attachment	Delete Attachment	View Attachment
10) Please attach Attachment 10		Add Attachment	Delete Attachment	View Attachment
11) Please attach Attachment 11		Add Attachment	Delete Attachment	View Attachment
12) Please attach Attachment 12		Add Attachment	Delete Attachment	View Attachment
13) Please attach Attachment 13		Add Attachment	Delete Attachment	View Attachment
14) Please attach Attachment 14		Add Attachment	Delete Attachment	View Attachment
15) Please attach Attachment 15		Add Attachment	Delete Attachment	View Attachment

OMB Number: 4040-0004
Expiration Date: 12/31/2022

Application for Federal Assistance SF-424

* 1. Type of Submission:
- [ ] Preapplication
- [x] Application
- [ ] Changed/Corrected Application

* 2. Type of Application:
- [x] New
- [ ] Continuation
- [ ] Revision

* If Revision, select appropriate letter(s):

* Other (Specify):

* 3. Date Received: 05/13/2022

4. Applicant Identifier: Port of Palacios

5a. Federal Entity Identifier:

5b. Federal Award Identifier:

State Use Only:

6. Date Received by State:

7. State Application Identifier: TX

8. APPLICANT INFORMATION:

* a. Legal Name: Matagorda County Navigation District 1

* b. Employer/Taxpayer Identification Number (EIN/TIN): (b)(4)

* c. UEI: (b)(4)

d. Address:

* Street1: 1602 Main Street
Street2:
* City: Palacios
County/Parish: Matagorda
* State: TX: Texas
Province:
* Country: USA: UNITED STATES
* Zip / Postal Code: 77465-5010

e. Organizational Unit:

Department Name:

Division Name:

f. Name and contact information of person to be contacted on matters involving this application:

Prefix:
* First Name: Victor
Middle Name:
* Last Name: Martinez
Suffix: Jr.

Title: Executive Director

Organizational Affiliation: Port of Palacios/Matagorda County Navigation District

* Telephone Number: 3619725556
Fax Number:

* Email: vmartinez@portofpalacios.com

Application for Federal Assistance SF-424

*** 9. Type of Applicant 1: Select Applicant Type:**

D: Special District Government

Type of Applicant 2: Select Applicant Type:

Type of Applicant 3: Select Applicant Type:

* Other (specify):

*** 10. Name of Federal Agency:**

Maritime Administration

11. Catalog of Federal Domestic Assistance Number:

20.823

CFDA Title:

Port Infrastructure Development Program

*** 12. Funding Opportunity Number:**

MA-PID-22-001

* Title:

2022 Port Infrastructure Development Program Grants

13. Competition Identification Number:

Title:

14. Areas Affected by Project (Cities, Counties, States, etc.):

Add Attachment | Delete Attachment | View Attachment

*** 15. Descriptive Title of Applicant's Project:**

Energy & Resilience Improvement Project (ERIP)

Attach supporting documents as specified in agency instructions.

Add Attachments | Delete Attachments | View Attachments

Application for Federal Assistance SF-424

16. Congressional Districts Of:

* a. Applicant: TX-027 * b. Program/Project: TX-027

Attach an additional list of Program/Project Congressional Districts if needed.

Add Attachment | Delete Attachment | View Attachment

17. Proposed Project:

* a. Start Date: 11/01/2022 * b. End Date: 08/31/2024

18. Estimated Funding ($):

* a. Federal	9,600,000.00
* b. Applicant	2,400,000.00
* c. State	0.00
* d. Local	0.00
* e. Other	0.00
* f. Program Income	0.00
* g. TOTAL	12,000,000.00

*** 19. Is Application Subject to Review By State Under Executive Order 12372 Process?**

☐ a. This application was made available to the State under the Executive Order 12372 Process for review on .

☐ b. Program is subject to E.O. 12372 but has not been selected by the State for review.

☒ c. Program is not covered by E.O. 12372.

*** 20. Is the Applicant Delinquent On Any Federal Debt? (If "Yes," provide explanation in attachment.)**

☐ Yes ☒ No

If "Yes", provide explanation and attach

Add Attachment | Delete Attachment | View Attachment

21. *By signing this application, I certify (1) to the statements contained in the list of certifications and (2) that the statements herein are true, complete and accurate to the best of my knowledge. I also provide the required assurances** and agree to comply with any resulting terms if I accept an award. I am aware that any false, fictitious, or fraudulent statements or claims may subject me to criminal, civil, or administrative penalties. (U.S. Code, Title 218, Section 1001)**

☒ ** I AGREE

** The list of certifications and assurances, or an internet site where you may obtain this list, is contained in the announcement or agency specific instructions.

Authorized Representative:

Prefix: * First Name: Victor

Middle Name:

* Last Name: Martinez

Suffix: Jr.

* Title: Executive Director

* Telephone Number: 3619725556 Fax Number:

* Email: vmartinez@portofpalacios.com

* Signature of Authorized Representative: Victor Martinez * Date Signed: 05/13/2022

OMB Number: 4040-0008
Expiration Date: 02/28/2025

BUDGET INFORMATION - Construction Programs

NOTE: Certain Federal assistance programs require additional computations to arrive at the Federal share of project costs eligible for participation. If such is the case, you will be notified.

COST CLASSIFICATION	a. Total Cost	b. Costs Not Allowable for Participation	c. Total Allowable Costs (Columns a-b)
1. Administrative and legal expenses	$ 200,000.00	$	$ 200,000.00
2. Land, structures, rights-of-way, appraisals, etc.	$	$	$
3. Relocation expenses and payments	$	$	$
4. Architectural and engineering fees	$ 1,080,000.00	$	$ 1,080,000.00
5. Other architectural and engineering fees	$ 30,000.00	$	$ 30,000.00
6. Project inspection fees	$	$	$
7. Site work	$	$	$
8. Demolition and removal	$	$	$
9. Construction	$ 10,690,000.00	$	$ 10,690,000.00
10. Equipment	$	$	$
11. Miscellaneous	$	$	$
12. SUBTOTAL *(sum of lines 1-11)*	$ 12,000,000.00	$	$ 12,000,000.00
13. Contingencies	$	$	$
14. SUBTOTAL	$ 12,000,000.00	$	$ 12,000,000.00
15. Project (program) income	$	$	$
16. TOTAL PROJECT COSTS *(subtract #15 from #14)*	$ 12,000,000.00	$	$ 12,000,000.00

FEDERAL FUNDING

17. Federal assistance requested, calculate as follows: (Consult Federal agency for Federal percentage share.) Enter the resulting Federal share.	Enter eligible costs from line 16c Multiply X 80 %	$ 9,600,000.00

DISCLOSURE OF LOBBYING ACTIVITIES

Complete this form to disclose lobbying activities pursuant to 31 U.S.C.1352

OMB Number: 4040-0013
Expiration Date: 02/28/2025

1. * Type of Federal Action:
- [ ] a. contract
- [x] b. grant
- [ ] c. cooperative agreement
- [ ] d. loan
- [ ] e. loan guarantee
- [ ] f. loan insurance

2. * Status of Federal Action:
- [ ] a. bid/offer/application
- [x] b. initial award
- [ ] c. post-award

3. * Report Type:
- [x] a. initial filing
- [ ] b. material change

4. Name and Address of Reporting Entity:

[x] Prime [ ] SubAwardee

* Name: Matagorda County Navigation District No 1/Port of Palacios

* Street 1: 1602 Main Street Street 2:

* City: Palacios State: TX: Texas Zip: 77465

Congressional District, if known: TX-027

5. If Reporting Entity in No.4 is Subawardee, Enter Name and Address of Prime:

6. * Federal Department/Agency:

Maritime Administration

7. * Federal Program Name/Description:

Port Infrastructure Development Program

CFDA Number, *if applicable:* 20.823

8. Federal Action Number, *if known:*

Victor

9. Award Amount, *if known:*

$ 0.00

10. a. Name and Address of Lobbying Registrant:

Prefix: * First Name: N/A Middle Name:

* Last Name: N/A Suffix:

* Street 1: N/A Street 2:

* City: N/A State: Zip:

b. Individual Performing Services (including address if different from No. 10a)

Prefix: * First Name: N/A Middle Name:

* Last Name: N/A Suffix:

* Street 1: N/A Street 2:

* City: N/A State: Zip:

11. Information requested through this form is authorized by title 31 U.S.C. section 1352. This disclosure of lobbying activities is a material representation of fact upon which reliance was placed by the tier above when the transaction was made or entered into. This disclosure is required pursuant to 31 U.S.C. 1352. This information will be reported to the Congress semi-annually and will be available for public inspection. Any person who fails to file the required disclosure shall be subject to a civil penalty of not less than $10,000 and not more than $100,000 for each such failure.

*** Signature:** Victor Martinez

***Name:** Prefix: * First Name: Victor Middle Name:

* Last Name: Martinez Suffix: Jr.

Title: **Telephone No.:** 3619725556 **Date:** 05/13/2022

Federal Use Only:

Authorized for Local Reproduction
Standard Form - LLL (Rev. 7-97)