

PORT EXPANSION PILING GUIDE

Panama Canal Widening and Its Effects on Ports



LBFoster

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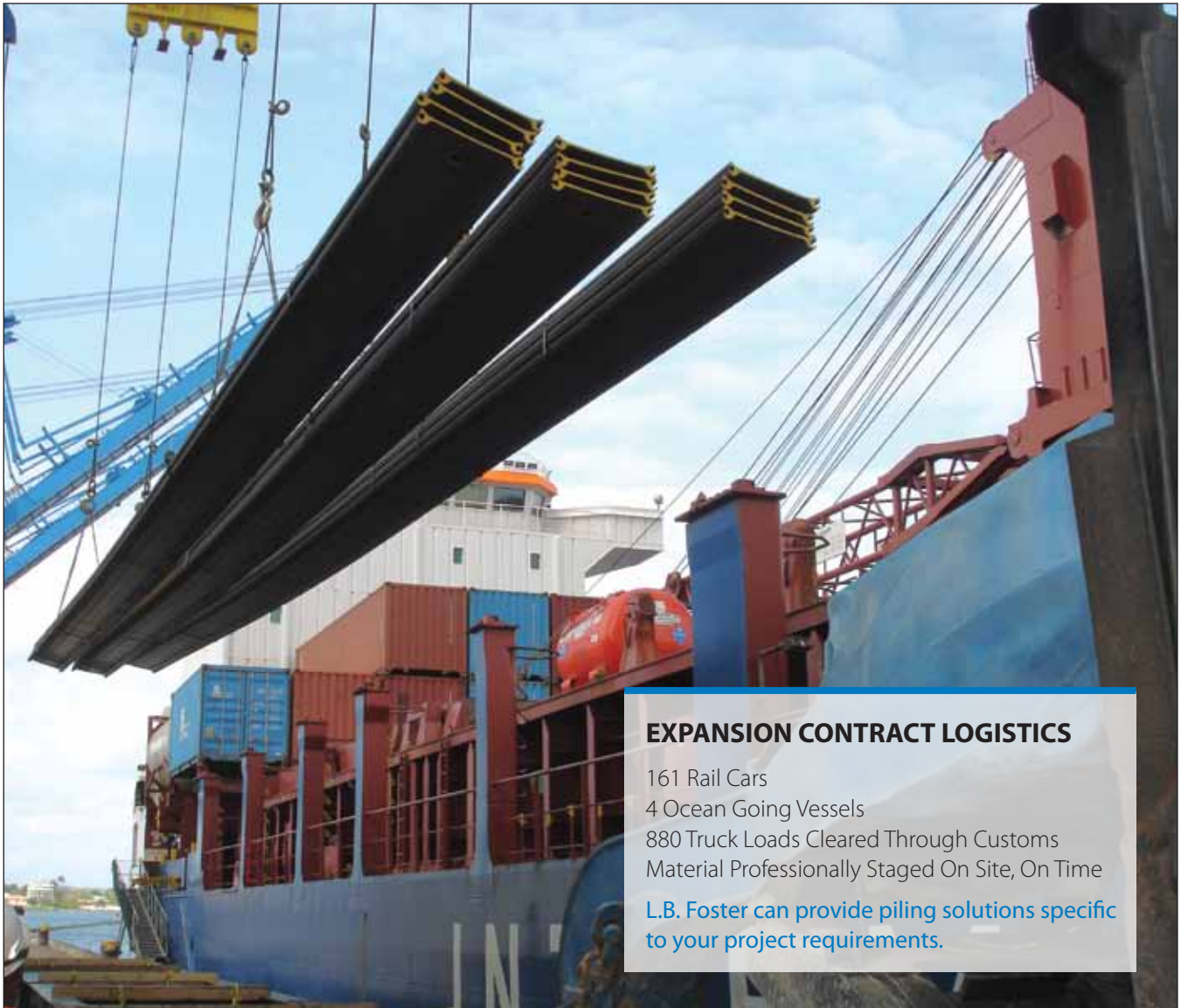
IS YOUR PORT READY FOR THE PANAMA CANAL EXPANSION?

L. B. FOSTER PRODUCTS, TECHNICAL EXPERTISE AND LOGISTICS CAN HELP

NEW POST-PANAMAX VESSELS WILL REQUIRE EXPANDED PORT ACCESS

A sustained increase in international trade has created new demand for efficient transportation and necessitated an historic event, the expansion of the Panama Canal. This project sets the stage for the United States to meet future transportation needs by providing access at major port facilities for larger deeper draft vessels and the ever growing volume of cargo on the Caribbean and Atlantic seaboard. The Panama Canal expansion presents many new challenges and opportunities for growth. The U.S. must formulate plans for infrastructure improvements that will optimize its intermodal system route to allow accessibility and improve operations in our ports for the increased traffic generated by the Canal's \$5.3B investment.

New state-of-the-art locks, wider channels and deepening of the existing waterway will provide access for ultra-large intermodal ships traveling directly from Asia to the United States East Coast and the Gulf of Mexico, rather than unloading containers on the West Coast and continuing freight by rail or truck across the United States. The larger freighters known as Post-Panamax vessels, will have 2.5 times the cargo capacity of the current container ships that navigate the Canal. All major contracts for the waterway expansion are well under way and timed to coincide the 2014 project completion with the 100th anniversary of the original Canal opening.



EXPANSION CONTRACT LOGISTICS

161 Rail Cars
4 Ocean Going Vessels
880 Truck Loads Cleared Through Customs
Material Professionally Staged On Site, On Time

L.B. Foster can provide piling solutions specific to your project requirements.

L.B. FOSTER PROVIDES SHEET PILING FOR PANAMA CANAL EXPANSION

L.B. Foster provided approximately 17,000 tons of steel sheet piling to the Panama Canal Authority (ACP) for use in the Panama Canal Expansion Project. PS-31 flat sheets and PZC-26 Z-type sheet piling manufactured by L.B. Foster's strategic partner, Gerdau Ameristeel, were purchased directly by ACP to minimize project lead time. The material was pre-staged for later use to construct an over 5,900 ft combination cellular/Z pile cofferdam for the landmark Pacific Access Channel and Borinquen Dam.

L.B. Foster personnel managed the truck, rail and ocean transport from steel mills in the United States via the MIT terminal in Colon to a staging area adjacent to the Pedro Miguel Locks on the Pacific side of the canal. The successful logistics required to move 17,000 tons of steel sheet piling from plants in Virginia and Texas across the isthmus of Panama required the best efforts of professionals on the L.B. Foster/Gerdau Ameristeel team.

This extraordinary project includes the construction of 58 closed cell sheet pile cellular cofferdams for the Borinquen Dam. The sheet piling is being installed as a base for the dam to elevate and separate the new Pacific Access Channel from the existing Canal. The water level of the new channel will be 9 meters above the current Canal between Miraflores and Pedro Miguel Locks.

WE SUPPLY INNOVATIVE PRODUCTS AND PROFESSIONAL SERVICE

L.B. Foster Piling has been a leading supplier of flat, pipe, H beams and Z sheet pile to the construction industry for over 85 years. Our long experience in the production and application of structural and sheet piling extends to today's current line of quality sheet piling sections. A wide range of piling accessories, sheet and pipe piling are available nationwide for sale or rent from convenient regional stocking locations. Our professional team works closely with customers to provide quality service from project planning through completion.

PZC™ IS WIDER LIGHTER STRONGER THAN TRADITIONAL SHEET PILING

INNOVATIVE PZC SHEET PILING

PZC sheet piling is domestically produced by Gerdau Ameristeel and delivered by L.B. Foster. We work with Gerdau Ameristeel as strategic partners to provide the cost savings of innovative PZC sheet piling to customers throughout North America and internationally. PZC sheet piling is manufactured to be wider, lighter and stronger than traditional Z piling. This unique design maximizes production, minimizes the amount of required steel and increases strength per pound.

NEW PZC SECTION SIZES

L.B. Foster introduces the strongest domestically-produced, hot-rolled sheet piling sections available. New PZC 37, PZC 39 and PZC 41 are designed and manufactured by Gerdau Ameristeel to meet the highest load requirements. These innovative pile sections feature the Gerdau Sheet Piling ball-and-socket interlock that allows easy, flexible setting and more durability through driving.

[Materials fully melted and manufactured in US.](#)

PZC™ is a trademark of Gerdau Ameristeel.



Photo Courtesy of Boh Bros.

L.B. FOSTER PILING PRODUCTS, ACCESSORIES AND STRATEGIC PARTNERS

PZC™ 13, 18, 26, 39, Z-PILE

PS 27.5 & 31 FLAT WEB PILE

WIDE FLANGE BEAMS

H-PILE

PIPE PILE

PILEPRO® EXTRUDED CONNECTORS

PILING POINTS AND SHOES

WADIT — INTERLOCK SEALANT

SERVICES PROVIDED

LOGISTICS SUPPORT

ENGINEERING

CAD LAYOUT

SSP SOFTWARE DESIGN PROGRAM

OPEN CELL SHEET PILE® SYSTEM

SECURITY PRODUCTS

COMBI-WALL

RENTAL SHEET PILE

CORROSION PROTECTION

STRATEGIC PARTNERS

Gerdau Ameristeel

PilePro

PND Engineers

Gerdau Ameristeel PZC, PS, Wide Flange and H- Pile meet all requirements of Buy America and Buy American Acts.

INNOVATIVE PILING STRUCTURES FOR PORT EXPANSION PROJECTS

COMBI-WALL STRUCTURE



PROVEN PERFORMANCE FOR IDEAL AND EXTREME PORT CONDITIONS

OPEN CELL SHEET PILE® SYSTEM

The OPEN CELL® bulkhead is used primarily on docks and similar structures. The system functions as a horizontally-tied membrane relying solely on the vertical flat sheet pile anchor wall to restrain a curved flat sheet pile arch face.

- High load capacity
- Provides excellent performance in high seismic conditions
- Can be used for walls from 20' to 80'+
- Accommodates soft soils and shallow overburden
- Adaptable to difficult and unique site conditions

COMBI-WALL SYSTEM

L.B. Foster Company is dedicated to providing the most efficient combi-wall system for your needs utilizing a variety of components. Using specialized beams from Peine, wide-flange beams or pipe piles along with extruded connectors from PilePro® and PZC™ sheet pile from Gerdau Ameristeel, L.B. Foster is able to provide an efficient solution to meet your project requirements.

OPEN CELL® and OPEN CELL SHEET PILE® are registered trademarks of PND Engineers, Inc..

L.B. FOSTER PROVIDES RAIL AND FABRICATED STEEL FOR PORT APPLICATIONS

NEW RAIL

L.B. Foster is the market leader in the distribution of new rail throughout North America, supplying rail for heavy haul, industrial, low density and passenger/transit applications. We supply rail sections from 12-lb. to 175-lb. in lengths of 39 ft., 40 ft., 78 ft. or 80 ft.. In addition to stick rail, L.B. Foster can provide continuous welded rail (CWR) delivered to the jobsite on our own trains. Unloading services are also available.



CRANE RAIL SYSTEMS

We provide a complete line of crane rail and accessories for a variety of industrial and port applications including overhead cranes, gantry cranes, portal cranes, AS/RS systems, stadium roofs, stacker/reclaimer cranes and rail mounted tower cranes. We supply crane rail in weights of 12-lb. up to 175-lb. in lengths of 30 ft., 33 ft., 39 ft., 40 ft., 60 ft. and 78 ft.



CXT CONCRETE TIES

L.B. Foster offers a complete line of concrete railroad ties including standard track ties and gantry ties that are ideal for port uses. We also provide specialty ties, such as guard rail ties, restraining rail ties and grade crossing ties. All concrete ties are designed in accordance with AREMA and owner specifications.



FABRICATED STEEL PRODUCTS

Our company fabricates structural steel products and is AISC certified for simple steel bridges, major steel bridges, conventional steel building structures, complex steel building structures, fracture critical endorsement and sophisticated paint endorsement.

L.B. FOSTER PILING SALES REGIONS and CONTACTS

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