



# Waterfront Industrial Facility Services

**CEC provides specialized geotechnical and structural engineering, hydrological, ecological, environmental, and survey services to assist existing and potential owners and operators of waterfront industrial facilities.**

CEC offers an array of design, maintenance, and rehabilitation services for waterfront structures such as piers, wharves, jetties, quays, and docks used for industrial operations located along rivers, lakefronts and ocean harborfronts.

CEC understands the importance of transporting large quantities of materials by vessels, such as barges and complemented with tug boats, highways and railroad systems. The transfer of bulk product materials requires a specific arrangement between the shoreline and water, as well as, utilizing land transportation for the transfer of product.

CEC conducts on-site evaluations and assessments at the client's proposed and existing facilities to identify approaches and recommendations regarding operations aimed at product delivery, loading and off-loading processes, and safety. Understanding that capital improvement costs subtract from the "bottom line" at these facilities, CEC's ideas utilize value engineering approaches designed to consider existing topographic and bathymetric features and site conditions.

CEC also evaluates shoreline areas adjacent to waterfront structures to identify locations where shoreline erosion, unstable banks, or sediment buildup could create issues with river traffic. CEC also possesses the expertise needed to navigate the permit process, especially those related to the United States Army Corps of Engineers (USACE).

## STRUCTURAL SERVICES

- Open and Closed Support Structure Design
- Concrete or Steel Sheet Pile Design
- Deck Design

## ECOLOGICAL AND ENVIRONMENTAL PERMITTING SERVICES

- Ecological Sampling (mussels, fish, rare and aquatic wetland plants, T&E species)
- Dredged Material Studies
- USACE Section 401 and 404 Permitting
- State and Federal Permitting
- Local Zoning Approvals

## ENGINEERING SERVICES

- Civil Engineering (including Dredging)
- Geotechnical Engineering
- Drilling Investigations
- Soils Analysis
- Pile or Sheet Pile/Tieback Design

## SURVEYING SERVICES

- Topographic and Bathymetric Surveys

