

Berth 22 Reconstruction Project

Seismic Design and Analysis

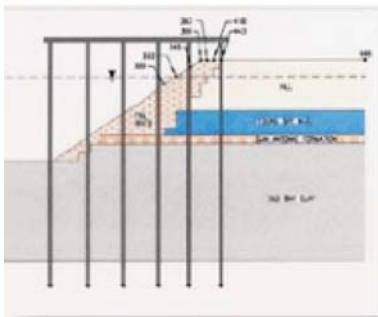
Location: Oakland, California

Owner: Port of Oakland

Berth 22 Statistics

Operator:	APM Terminals
Major Services:	Container
Berth Length:	261.2 M (867 ft.)
Water Depth (MLLW):	12.8 M (42 ft.)
Cranes:	1 (A Frame)

SC Solutions was contracted to evaluate the seismic performance of the proposed Berth 22 designs, particularly to properly capture the soil structure interaction actions in three-dimensional space. In developing the 3D model, the team developed these characteristics to enable the whole system to be designed to perform under various seismic events.



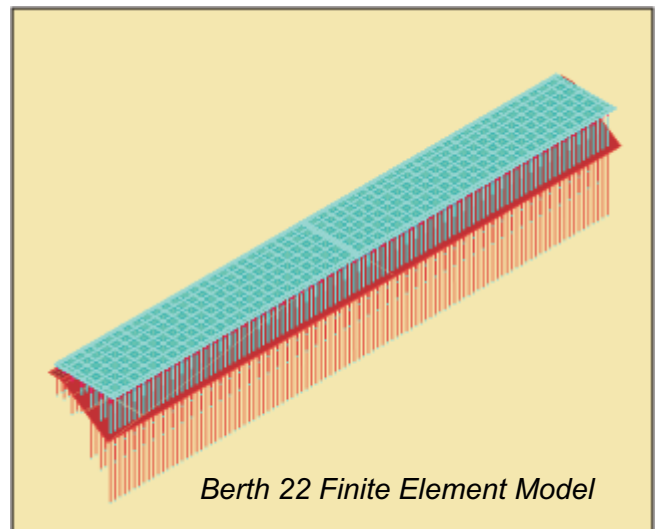
Berth 22 Typical Cross Section

Application of the advanced analytical procedures coupled with the application of the performance based MOTEMS Criteria provided designers all the necessary information to address many key performance issues.

These issues included:

- ✓Determination of Wharf Performance for multiple performance levels.
- ✓Investigation of Various Pile Head Details.
- ✓Investigation of Dike Geometry Effects.
- ✓Explicit Consideration of Dike Movement.

Analytical process included both pushover and more rigorous time history analysis. The information obtained during the analysis provided considerable insight into the behavior of the structural system.



Berth 22 Finite Element Model