

# Terminal 30 Apron Reconstruction and Yard Improvements

Seattle, Washington

**Owner:** Port of Seattle

**Description:** INCA Engineers, Inc., A Tetra Tech Company (INCA) provided engineering and survey services for design and prepared contract drawings and specifications for a new concrete apron at Terminal 30 for the Port of Seattle. The project included installation of 400 linear feet of new concrete aprons, demolition of the existing apron, design of a new concrete apron, and design of an electrical substation and rails for a new 100-kip operating load crane. INCA prepared a 15% cost estimate and updated it throughout the design to assure the owner that the budget would be met.

This \$6 million apron contract included pretensioned concrete deck panels placed over water, a five-foot-diameter drilled shaft system to resist lateral earthquake loads, underwater dredging of contaminated and clean soils, underwater pile driving and riprap placement, ship and barge moorage load design, concrete pretensioned piles driven under water, underwater surveying, and sonar mapping.

Design work for the Terminal 30 contract included over water cast-in-place construction, construction sequencing related to demolition of the existing apron and piling; interconnection to the existing previously upgraded apron to the north and 30-year apron south of the site; design for large, high capacity gantry cranes; design for elevated seismic load over pier structures and interaction with tenants and owner concerning operations during the construction period. INCA performed civil/site work to provide water and electrical service from the new substation, and paving and drainage plans throughout the 40,000 square foot work area.

