

Massport raises two cranes

A West Coast consultant figured a way to raise the height of two East Coast low-profile container cranes without taking them out of service—a feat that he says has not been done before.

Each crane at Massport, in Boston, was raised 20 ft by a self-jacking system that could be stopped at intermediate heights if the crane was needed by the port operator. William Casper, president of Casper, Phillips & Associates, Tacoma, Wash., designed the jacking system as a subconsultant to the Boston office of CH2M Hill Inc., the project's engineer. The Massachusetts Port Authority's contract called for no more

than five days continuous downtime, or less if the agency gave 48 hours notice. The penalty for not complying was \$2,000 per hour in liquidated damages.

Casper designed a technique to install telescoping sleeves on two faces of the crane legs, cutting the legs and jacking them in increments that allowed the rigging contractor to put in a series of temporary braces. The telescoping sleeves enabled crane legs to be secured so Massport could operate the crane.

Rigging contractor Dorel Steel Erection Co., Quincy, Mass., started work by installing new portal beams between the legs of the cranes. The box beams

served as platforms for the jacking operations and later became permanent braces for the 20-ft-taller cranes.

A few inches above the cut in a crane leg, Dorel welded the tops of 24-ft-long, 1-in.-thick steel plates to opposite sides of the box column leg. The whole lengths of the plates were shop drilled with four rows of holes at 6-in. centers. Below the cut, riggers drilled 40 holes in the leg to match the plate's pattern. This enabled Dorel to bolt the plate to the leg if it needed to stop work.

John Snow, Dorel's project manager, says four jacks raised each estimated 840-ton crane in about 18 hours. Jacking paused while riggers inserted cross bracing in the faces of the legs perpendicular to the telescoping sleeves.

When the jacks raised the legs 20 ft, the crew welded the bottom of the sleeves to the legs and replaced the cross bracing with steel plates. ■



New portal beams, painted blue, were installed, and jacks were based on them (center photo). Holes in telescoping sleeves welded to crane legs above the cut enabled it to be temporarily bolted to leg if crane was needed. Temporary cross bracing, installed as jacking proceeded, was replaced with plates.