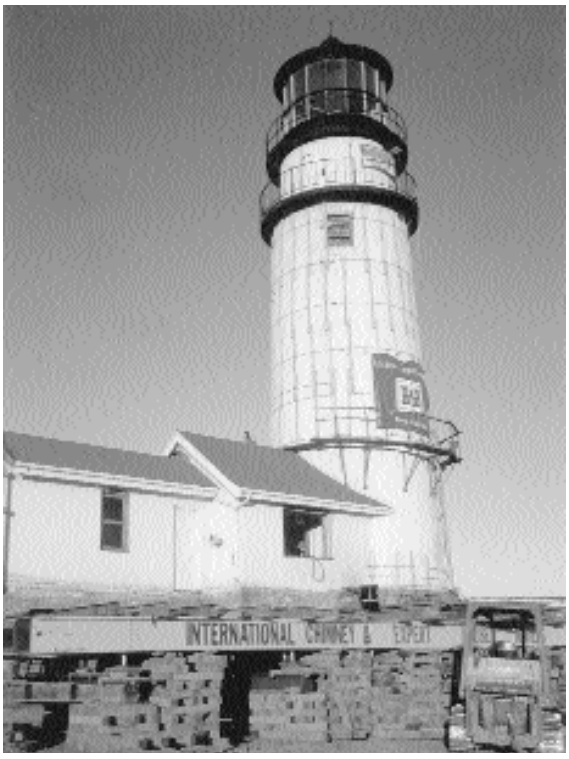
Joseph J. Jakubik

# Relocation of the Highland Lighthouse, North Truro, MA



*Preparatory work begins on the lighthouse, including bracing all the windows, installing masonry reinforcement,bracing the chimneys, and concrete cutting and coring for the placement of beams.*

International Chimney Corporation was contracted by the Army Corps of Engineers to relocate the 450-ton Highland Lighthouse (commonly known as the Cape Cod Light) approximately 450' back from an eroding cliff. The project was funded by the National Park Service, Cape Cod National Seashore, and the U.S. Coast Guard CEU Providence, and with contributions from a local preservation group.




*A support grid is installed underneath the lighthouse and the structure raised in order to facilitate placement of travel beams.*



*Travel beams are installed under the structure (left).*




*A secondary set of jacks is employed to lower the building vertically. Horizontal movement is achieved through the use of push rams activated between the travel beams and the main beams (right).*

While this project is still underway at the time of this writing, the lighthouse has been successfully relocated to its new foundation, consisting of an 18"-thick reinforced concrete slab with solid structural brick serving as infill and forming the foundation walls.

International Chimney Corporation's plan for the relocation called for the entire lighthouse, complete with equipment room and connector building to be relocated in one piece. An attached keeper's quarters of wood frame construction was initially separated from the masonry structure and placed in storage for relocation at a future date.

Preparatory work for the relocation of the Highland Lighthouse included bracing all openings, repainting stress cracks in the masonry tower, installing reinforcing on and through the masonry, and grouting three independent widths of brick together at the base of the tower and connector building.

The masonry structure did not have a conventional footer and foundation wall; rather a 3'-deep brick footprint had been constructed on native sand. The lack of a proper footer increased the difficulty of the move and required careful excavation of sandy soil to prevent undercutting the masonry.

International Chimney Corporation's concrete cutting and coring division installed precisely cut holes in the masonry to allow for placement of support beams and grillage. The steel support beams, commonly known as cross steel, were in contact with the masonry and were themselves supported by duplex beams commonly known as



*The Highland Light was relit in its new location on November 3,1996.*

mains. The mains were equipped with a series of 60-ton hydraulic jacks installed in an inverted position.

The purpose of the main beams was to spread the load of the cross steel and allow for even jacking. The structure was initially lifted off its present foundation under the Unified Lifting System. The Unified Lifting System allows for pressure on the jacks to be placed evenly; thus, all points come up at the same time.

Once lifted, the lighthouse was placed on roll beams supported by wooden cribbing. The hydraulic jacks installed in the mains were activated and cradled in roller dollies which allow for movement on the roll beams. At this point, the hydraulics were arranged for three zone travel, allowing for compensation between the zones should unanticipated settlement occur.

Movement was accomplished when hydraulic rams, interconnected between the roll beams and the main beams were activated, pushing the hydraulically suspended lighthouse on roller dollies down the roll steel.

Unique to this relocation project was an ingenious method of lowering the structure evenly to account for a 10' drop in grade. A secondary set of jacks was installed in the main beams, which were activated in unison and suspended the building while roll beams were lowered to compensate for grade. The building was then lowered in increments, and placed upon the newly set roll beams.

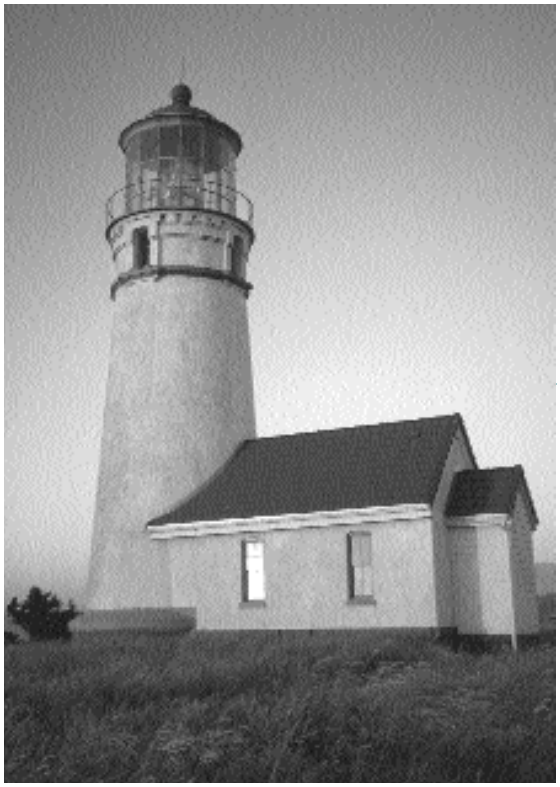
The relocation was accomplished during the latter half of July 1996 and the beginning of August 1996.

---

*Joseph J. Jakubik is Project Manager for International Chimney Corporation. Photos courtesy International Chimney Corporation*

David Pinyerd

# Preservation Education at the Cape Blanco Lighthouse



*Cape Blanco Lighthouse (1870) with altered workroom roof and enclosed entry vestibule.*

The Cape Blanco Lighthouse comes with several superlatives: it's the highest lighthouse in Oregon at 256' above sea level; it's the westernmost lighthouse on the mainland in the lower 48 states; it's the oldest operating lighthouse in Oregon (1870); and it had the longest serving lighthouse keeper on the Pacific Coast, James Langlois, who was stationed at Cape Blanco for 42 years. As with all lighthouses open to the public, its current operation is a joint effort. Through a cooperative agreement, the Coast Guard operates the light and owns the land on which it sits, the Bureau of Land Management (BLM) interprets the site and maintains the lighthouse and grounds, Oregon State Parks manages the 1,895-acre park that buffers the lighthouse property and coordinates the docents that interpret the lighthouse, and the Friends of Cape Blanco provide docents and help fund lighthouse projects. And to add to the mix, this past summer, the University of Oregon became involved with the lighthouse.