



## ■ Marine Structures



### Reference Details:

**Owner** Orange and Rockland Utilities, Inc.

**+++ Contractor**  
HYDRO GROUP +++

**Engineer** Paul C. Rizzo  
Associates, Inc.

**DSI-Lang Services** 22  
POLYSTRAND HC  
anchors of 55, 58K  
strands, ranging from  
134-161 ft.



## Rio Dam Anchored by POLYSTRAND™ HC Tiedowns

Rio Dam, owned by Orange and Rockland Utilities, Inc., was constructed in the 1920's to provide power to southeastern New York. Current Federal Energy Regulatory Commission (FERC) standards required remedial stabilization for increased resistance to sliding. Lang Tendons provided 1936 kip anchors necessary for the rehabilitation along with an innovative corrosion protection system.

The 22 tiedowns were installed to stabilize the slightly arched spillway, 264 feet long by 101 feet high. The 55 strand tendons ranged from 134 to 161 feet. Lang's corrosion protection system covers the entire length of each tendon with a large diameter, heavy wall corrugated sheath. Each sheath had an 10 inch I.D. to fit over the massive strand bundle and within the 14.5 inch drill hole. Because of the large tendon diameter, the corrugated pipe was procured in straight lengths of 40 feet. Using an innovative electric thermowelding process, the corrugated sheath protection was assembled at the job. Each sheath was then lowered into its drill hole and grouted in place.

Preassembled POLYSTRAND anchors, with restressable anchorheads and lifting hardware already attached, arrived on site in palletized coils. Even with difficult access to the dam's crest, installation of the massive tendons was manageable through use of Lang's compact, hydraulic uncoiler. Lang's high capacity stressing system facilitated efficient and accurate anchor testing. Use of the outer full length corrosion protection encapsulation and the extruded POLYSTRAND sheath in the unbonded length, insure an extended life for Rio Dam.