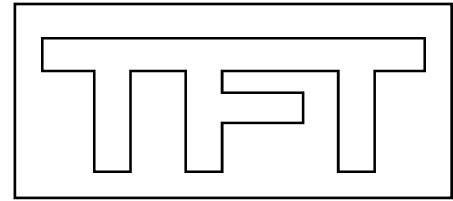


CASE HISTORY

CH-050



BIO-GARD 257 SEALS AND PROTECTS CONCRETE DAM SURFACES AGAINST FROST AND LEAKAGE

THE CHALLENGE: A high altitude, pumped storage, concrete buttress-type dam suffered from leakage through the structure and from consequent freeze/thaw damage on both the downstream and pressure-side walls during frequent periods of heavy frost. Although the dam was in no danger of structural failure, continual freeze/thaw damage was causing significant wear on the pressure side and heavy spalling damage on the downstream face.

Since it was nearly impossible to properly coat surfaces on the negative side of hydrostatic pressure and flowing leaks, it was therefore necessary to seal by coating the positive or pressure side. As the dam's water level changes as much as 80 feet *daily*, the selected coating had to be completely tolerant to wet surfaces as well as environmentally benign so there would be no possibility of damage to local wildlife or ultimate down-stream users of the dam's water.

THE SOLUTION: TFT tested an accelerated version of BIO-GARD 257 designed to accommodate the harsh application conditions experienced on site. (*See TFT Case Histories 43 & 44*). These test applications, made under the severe practical circumstances, remained in perfect condition after a two year exposure. Consequently, the dam operators decided to undertake a much broader coating operation aimed at sealing the dry pour joints that were leaking during the summer of 2004.

BIO-GARD 257 was applied by roller in two coats over the actual dry pour joints extending about 26 feet (8 meters) on either side to a depth of 80 feet (24 meters). The first coat of mauve-tinted coating was easily applied onto the running wet concrete surface immediately after preparation by hydro blasting. After 4 – 24 hours, a second coat of gray-tinted material was applied.



Applications were made from a hanging scaffold that followed the water level as it fell throughout the day. Water blasters, operating at approximately 5000 psi, were effective in removing algae and other surface contamination. This resulted in a wet, but otherwise clean surface. The BIO-GARD 257 coating with a pot life in excess of 45 minutes, was applied with no problem directly to the surface using rollers, and it cured to a "firm" condition in about 5 hours.

THE RESULT: The application by roller directly onto running wet concrete was completely without problems. The BIO-GARD 257 cured well overnight, even when underwater, and has formed a tough, tightly adherent coating which has given many years of protection to the irreplaceable dam structure.

For more information regarding this project contact:

Jeff Longmore, Technical Director
Thin Film Technology, Inc.