

# Surviving Pearl Harbor

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June 2015 » Project + Technology Portfolio » Commercial/Industrial/Government

Corrosion damage mitigation and new coating systems restore the Harbor Control Tower.

Sherwin-williams Protective and Marine Coatings

The Harbor Control Tower was restored to its original orange and white checkerboard pattern. Photo: Sherwin-Williams Protective and Marine Coatings

**The Harbor Control** Tower a historic water tank and signal tower located near the Pearl Harbor Naval Shipyard was constructed in 1925. Built jointly by the U.S. Army and Navy the tower served as an observation deck for monitoring and directing naval traffic in the waterways of Pearl Harbor.. Miraculously the Harbor Control Tower survived the attacks from Japan and remains a prominent structure on the island more than 70 years later. However despite the tower's ability to withstand war its steel components have been no match for Pearl Harbor's harsh environmental conditions which are conducive to corrosion. Enter rehabilitation.

High humidity, atmospheric salt, and powerful UV rays combine to form a recipe for corrosion. After years of being exposed to all three conditions, the time had come to restore the carbon steel Harbor Control

Tower. In order to keep the tower functioning for port operations, it needed to be repaired. To mitigate corrosion damage in the future and to restore the tower to its original orange and white color scheme, a new coating system was included in the restoration project.

Coatings contractor, Abhe & Svoboda, Inc. had to conduct full lead abatement to remove hazardous material from the tower prior to painting. Enter change orders. "Once we completed sandblasting, we discovered more and more unplanned repairs," said Nick Schmid, Abhe & Svoboda area manager. "There were holes in the water tank, and the legs needed to be repaired, not to mention rust was encompassing most of the structure."

Not only were repairs and refinishes necessary, but some components needed complete removal and replacement. The steel components throughout the structure suffered from severe corrosion damage. The



stairs, landings, ladders, beams, and flanges — nearly all components of the tower — were affected.

To ensure such damage would not happen in the future, a coating system capable of combating corrosion and providing superior durability and UV protection from the sun's harsh presence in Pearl Harbor was specified. Sherwin-Williams Protective and Marine Coatings was chosen for the job.

"A base coat that could provide a strong layer of protection and a top coat that could stand up to severe UV exposure were paramount when selecting coatings for the tower," Schmid said. "An inferior topcoat that couldn't tolerate extended UV exposure would fade, and when the government spends time and money on a project like this, they want a product that will last."

Zinc Clad III HS, a polyamide epoxy, zinc-rich coating, was used for corrosion prevention as the base coat. To ensure protection of edges, corners, and welds, Macropoxy 646, a high-solids, fast-cure epoxy, was applied as the intermediate coat. The top coat, Fluorokem HS, played the most crucial role in aesthetically repairing the tower.

"In order to preserve the tower as a historic landmark and to restore its integrity, the original orange and white checkerboard color scheme needed to be achieved," said Casey Turville, west area district sales manager for Sherwin-Williams. "Color and gloss retention were fundamental performance characteristics when choosing the proper coating system."

Temperatures in the mid-90s pushed the maximum temperature suitable for coatings application. The tower was fully encapsulated in tarp with scaffolding surrounding the perimeter. Coating application by means of industrial pumps started at the top of the tower and worked its way down.

The coating process started in late summer (when the air was dryer) and took roughly three months to complete. If it were any hotter, coatings application would not be executable. However, temperature was not the project's only challenging circumstance.

"The biggest challenge during the application process was aligning the orange and white checkerboard pattern in every direction," Schmid said. "For the final coat, we spent a lot of time measuring out each square with a laser."

Although the project was slated for completion prior to 2014, the unforeseen structural issues extended the time it took to repair and rehabilitate the Harbor Control Tower at Joint Base Pearl Harbor-Hickam. Restoration was completed in April 2014 and cost \$11.2 million.

The Harbor Control Tower is the only remaining water tower of three jointly built by the U.S. Army and Navy in the 1920s. The tower stands tall on the Pearl Harbor skyline in its original color scheme and will serve as a historical reminder for generations to come.

*Information provided by Sherwin-Williams Protective and Marine Coatings ([protective.sherwin-williams.com/industries/marine](https://protective.sherwin-williams.com/industries/marine)).*