



**CEMENT  
QUICK FACTS**

**PROCUREMENT  
MODEL:  
COLLABORATIVE**

**LAFARGE'S ROLE:  
CEMENT SUPPLIER**

**TOTAL VOLUME  
13,000 TONNES**

**COMPLETION  
DATE:  
NOVEMBER 2018**

# WAKE ISLAND: CUSTOMIZED CEMENT BLEND ON A REMOTE ISLAND

WAKE ISLAND

## PROJECT OVERVIEW

Wake Island (also known as Wake Atoll) is a coral atoll in the western Pacific Ocean in the northeastern area of the Micronesia subregion, 3,698 kilometres west of Honolulu and 3,204 kilometres southeast of Tokyo. The island is an unorganized, unincorporated territory of the United States that is administered by the United States Air Force under an agreement with the U.S. Department of the Interior. Wake Island is one of the most isolated islands in the world.

The center of activity on the atoll is at Wake Island Airfield, which is primarily used as a mid-Pacific refueling stop for military aircraft and an emergency landing area. The 9,800-foot (3,000 m) runway is the longest strategic runway in the Pacific islands.

When the United States Air Force needed to repave the runway, they relied on Lafarge's unparalleled logistics fleet and custom cement blends to ensure success.



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### EXACTING PERFORMANCE REQUIREMENTS WITH INNOVATIVE SOLUTIONS

General use limestone cement, manufactured at the Richmond Cement Plant in British Columbia, was blended with slag cement manufactured in Seattle to create the high performing surface required for military vehicles and aircraft. The final custom blend was bagged at our Seattle facility before loading onto barges.

Slag cement's low heat of hydration, durability and resistance to soil and water containing excessive amounts of sulphates, alkalies, metals as well as acidic water make it ideal for marine applications. The never-ending action of waves pounding the shoreline creates salt spray. When this evaporates, tiny bits of salt are carried to the land by the trade winds. If the land is in a rain shadow and remains dry, the excess salt in the soil can adversely affect surface paving.

Lafarge's engineers carefully considered the site's unique demands, and designed a 50-50 blend of GUL cement and slag cement for the project. GUL cement's compressive strength paired with the durability of slag provided the right solution for Wake Island's unique environment, and the very first heavy airfield ever paved with GUL. Thanks to our previous experience working with the general contractor and US Air Force in Washington state, Lafarge was granted a unique chance to conduct trial batching and durability studies on the custom blend, and our success provides the opportunity to include GUL in future heavy duty projects.





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### MOVING BAGGED CEMENT ACROSS THE PACIFIC OCEAN

It's no small feat to transport 13,000 tonnes of bagged cement more than 7,000 kilometres across the Pacific ocean. Bagged in 2-ton bulk bags, the cement was loaded in 10s in sea-going containers loaded onto barges at our Seattle port. To protect the island's fragile ecosystem from any stowaways, the team installed rat traps throughout the containers.

Although Wake Island is supplied by sea-going barges and ships, the island's only harbor is too narrow and shallow for sea-going vessels to enter. The team transported bagging equipment to the island via three small landing barges to the dockyard in the harbor.

The barge loads of cement were docked on offcoast buoys, then transloaded onto the landing crafts, and motored one can at a time into the harbor. The bags are then unloaded and lifted onto those bag breakers (right), which in turn blow their contents into the plant.

Upon completion, Lafarge provided on-site certification to review installation and performance quality, ensuring consistency for the entire project.

