



PROJECT PROFILE

Koukouai Bridge

As-Built Documentation and Condition Assessment | Maui, HI



CLIENT

Wilson Okamoto Corporation

BACKGROUND

The Koukouai Bridge is located along the Piilani Highway across Koukouai Stream near Hana, Maui and is owned and maintained by the County of Maui. The bridge structure is of cast-in-place, conventionally reinforced concrete with stone masonry retaining walls at each end abutment. The structure comprises three parallel arches that support closely spaced columns and transverse floor beams, with one-way deck slabs spanning in the longitudinal direction between adjacent beam and column bents. The arches bear directly against the exposed rock walls of the gorge.

Wilson Okamoto Corporation retained WJE to make as-built measurements of the bridge, conduct a field survey to determine the existing condition of the structure, and perform laboratory analyses and testing of material samples. This work provided the client with information necessary to determine the structural capacity of the bridge and evaluate restoration and strengthening options.



SOLUTION

WJE engineers prepared detailed, as-built structural drawings of the bridge, showing structural member dimensions and steel reinforcement. The team performed petrographic studies, chloride profiles, and compressive strength testing on selected concrete samples as well as chemical analyses and tensile strength testing of reinforcing steel samples. The engineers determined that the structural elements sustained significant deterioration, primarily as a result of corrosion of the reinforcing steel. WJE concluded that with properly executed repairs and appropriate protective measures, the useful life of the bridge could be significantly extended.

