



Skagway Small Boat Harbor Dredging and Surge Control

Client: Municipality of Skagway
Location: Skagway, Alaska

Key Features:

- Partially penetrating vertical breakwater with public promenade
- Desktop and CGWAVE modeling
- SPIN FIN® pile dolphins



PND provided project management, master planning, design, geotechnical investigation, sediment analysis, and permitting services for the replacement and expansion of the Small Boat Harbor facilities in Skagway, Alaska, for the Municipality of Skagway. The project has been broken into phases and includes a new breakwater, dredging, and slope protection, along with new floats, gangways, an approach dock, a new heavy haul-out pier, boat ramp, and utilities.



PND completed Phase 1A of the project, a curved partially penetrating vertical breakwater that provides surge control at the harbor entrance. The harbor entrance is aligned with the direction of prevailing winds and waves, so prior to the breakwater construction it sometimes experienced excessive wave action, with waves as high as 5 feet. PND provided planning, design, coastal engineering, permitting, bid assistance, and construction support for the new 290-foot-long breakwater, which was constructed in up to 70 feet of water (from mudline to high tide). Work included concept design and location and alignment of the breakwater, as well as structural and foundation design.

The new breakwater features a timber promenade deck that sits on top, accessed from shore via a 100-foot-long catwalk. The general public is able to use the new promenade area for recreation purposes.

PND prepared a preliminary wind and wave study for breakwater alternatives and also provided computer modeling. PND staff utilized both desktop and CGWAVE modeling of wave transmission, wave diffraction, and reflected waves to evaluate waves at the adjacent ferry terminal floating dock and the shoreline north of the planned wave barrier.