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MARINE ENGINEERING PROJECT

TURBO SCOUR JET INSTALLATION FOR SEDIMENTATION CONTROL SYSTEM



Owner:

- ▶ U.S. Department of the Navy – Naval Facilities Engineering Command

Location:

- ▶ Kings Bay, GA, Naval Subbase—Magnetic Silencing Facility

Scour Jet Designer:

- ▶ SedCon Technologies, Inc.

Design Build Contractor:

- ▶ Marine Contracting Corp. – Virginia Beach, VA

Cost:

- ▶ Approximately \$4,200,000

Project Highlights:

- ▶ Turbo Scour Jet System was installed to eliminate traditional dredging requirements.
- ▶ Pre-stressed concrete piles with stainless steel tendons were installed with standard stainless steel tee to provide a track for the turbo scour units to be raised and lowered for service.
- ▶ All steel materials required to be stainless with a permeability

CRISER • TROUTMAN • TANNER provided complete marine and structural engineering design services on a design-build project by providing structural, hydraulic, and (coordinated) electrical design services in the coordination, planning, and design of support and utilities for the installation of a Turbo Scour Jet System by **SedCon Technologies, Inc** (formerly Scour Systems, Inc.). The new jet system was for the submarine berth of the Magnetic Silencing Facility (MSF) at the Submarine Base to eliminate future dredging requirements. Seven 36-inch diameter turbo scour units (TSU's) were arranged in a scour array on the outboard finger of the MSF pier to accomplish the scour along the entire berth and berth entrance of approximately 850 feet. The intent of the SCS is to enhance the water velocity inside the MSF slip during each outgoing tide with the intention of re-suspending sediment deposits and moving into the current of the tidal cycle once an initial dredge event has occurred. This eliminates the need to perform future dredge events. Limited construction phase services were provided.

Pre-stressed concrete piles were installed with a pile guide bracketed to the pile to provide a track for the turbo scour units to be raised and lowered for service. All components of the turbo scour, the pile guide and brackets, and the pre-stressing strands were required to be stainless steel with a low permeability rating due to the sensitivity of magnetism at this degaussing facility. Due to the orientation of the inhaul system, no permanent lifting mechanisms could remain in-place; therefore, a temporary lifting device with a capacity of 5 tons to lift the TSU's out for servicing and maintenance was designed to be portable to shore during degaussing events. Project dimensions were in English with soft conversion metric units.

A new control room was constructed against an existing two-story control building. Hydraulic pressure, actuator, return, and case drain rigid piping for controlling impeller valves and actuator valves for the TSU's were installed above the deck along the outboard edge of the finger pier as required by the Owner. Rigid valves leading to flexible reinforced hoses to the TSU's were provided for each line. Initially, the Owner stated that electrical power would have to be run from on-shore sources; however, after further field investigation and modifications to panels, power was obtained from the same panel as the inhaul winch, which were internally switched so that both systems could not operate at the same time.