

Silver HARD HAT AWARD

Outstanding Mechanical/Electrical Project

NOAA New Computer Room

Submitted by The RMH Group Inc., OZ Architecture, St. Andrews Construction Services Corp., U.S. Engineering Co.

The National Oceanic and Atmospheric Administration Computer Room, managed by Earth System Research Laboratory/Global Systems Division, needed to be both robust and reliable. With a mission of continually producing short- and long-term forecast models, the supercomputer makes possible new

discoveries in atmospheric, oceanic and hydrologic sciences to further the understanding of the Earth's weather and climate.

To fit a significant amount of equipment in a small space, the project team coordinated closely throughout the two-part design and construction process. The first phase focused on the room's infrastructure while the second involved electrical fitup after the actual computing equipment was selected.



Beginning with an empty, 2,200-sq-ft space, cooling, plumbing, electrical, architectural and fire protection systems were designed to keep the supercomputer continuously operational. Designed to cool 350 watts/sq ft in high-density areas, the cooling system is approximately 35 times larger than that found in a similar-sized room in a house. Seventy percent of the cooling is provided by CRAC units delivering into a cold aisle from below, with 30% furnished by overhead cooling modules. The system is N+1 redundant and equipped with special controls and alarms to monitor and prevent formation of condensation.

An outside air supply provides fresh air for occupants and pressurization to keep the space dust-free. Ecaro, an environmentally friendly dry fire protection agent, is used, with wet sprinklers as a backup. The space is protected by 67 smoke detectors.

A 500 kVA UPS accommodates the extreme densities required for initial and future computer rack loads. Since the existing standby generator is at capacity, should the power fail, a dedicated 400 kVA UPS will allow cooling to continue through a manual shutdown. An emergency power-off system can instantly de-energize all equipment in the room.

Completed on time and in budget, the facility has operated successfully since its completion to better our understanding of climate change.

NOAA New Computer Room

Boulder

Owner General Services Administration

User NOAA, Global Systems Division

Architect OZ Architecture

Mechanical Design The RMH Group Inc.

GC/Electrical Contractor St. Andrews Construction Services Corp.

Mechanical Contractor U.S. Engineering Co.

