New England
March 8, 1993
Construction
PUBLISHED TWICE MONTHLY
ACP

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Air Dome Speeds Ice Cream Plant Construction

Ben & Jerry's employs huge air structure to allow winter work on St. Albans, VT, manufacturing facility

A giant air-supported structure inflated by two powerful heaters has enabled contractors to continue concrete work right through winter on a new ice cream plant in northern Vermont.

Dubbed the "scooper dome" by the local press, the vinyl-coated polyester structure covers a 47,000-square-foot area on the site of a new $28 million Ben & Jerry's manufacturing facility in St. Albans. The plant is being built using a fast-track method under the construction management of Thermal C/M Services, Inc., a Lancaster, PA, consulting firm specializing in the food processing industry.

Constructed by the Fabric Shop of Monmouth, ME, the air structure was tailored for the Ben & Jerry's plant using approximately 10,000 square yards of fabric and computer-generated patterns, according to the company's erection superintendent Art Kenney. It was trucked to St. Albans in seven pieces which were assembled at the job site, and carefully erected when the weather permitted. High velocity winds are common in the Lake Champlain Valley community.

"We had to wait until the wind velocity was under ten miles per hour," said D.M. (Mike) Duke, construction manager for Thermal C/M. "The thing was like a huge sail."

Workers erected the air structure on a calm morning just before dawn, inflating it with warm air provided by two, 4.5-million-BTU natural gas heaters provided by BABFAR Equipment Corp. of Millis, MA.

The heaters operate continually, supplying enough air to keep the structure inflated with approximately 0.2 psi pressure, while maintaining the air temperature inside the 3.2 million-cubic-foot enclosed space at a constant 55 degrees. The heaters team up with pressure-actuated damper outlets that allow four complete changes of air every hour. Personnel entrances and a 70-foot-long vehicle and equipment entrance are all equipped with double doors to form air-tight locks that prevent deflation. The door at the beginning of each airlock has to be closed before the second door will open.

The Fabric Shop used roughly 10,000 square yards of vinyl-coated polyester to make the huge dome, one of the largest ever erected in the Northeast.

The 170-foot by 278-foot by 66-foot-tall air structure, one of the largest ever erected in the Northeast, encloses Area B of the modern new plant. This 33,000-square-foot section of the facility contains the bulk of the state-of-the-art refrigeration equipment, storage tanks, mechanical equipment, cold rooms and other hi-tech components. Area B includes freezer rooms, ingredient rooms and product-hardening rooms where temperatures are so low — down to 40 degrees below zero — that five-inch-thick urethane foam insulating mats and floor-warming pipes have to be installed beneath the concrete floor slabs to protect the earth from freezing.

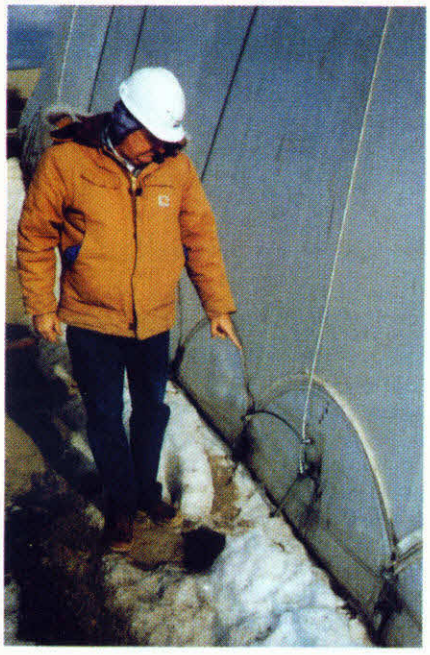
Because of a tight construction schedule, Duke, a veteran of nearly four decades of construction, recommended that Ben & Jerry's purchase the air structure to allow contractors to pour concrete foundations right through the region's bitter cold season.

"We had only 14 months to finish this job, so I knew we had to work right through the winter to stay on schedule," said Duke.

The air structure has proved its

By Paul Fournier

Reprinted from – NEW ENGLAND CONSTRUCTION – March 8, 1993



Duke points to steel cable tied to one of many screw anchors embedded in the earth to hold the air structure in place.

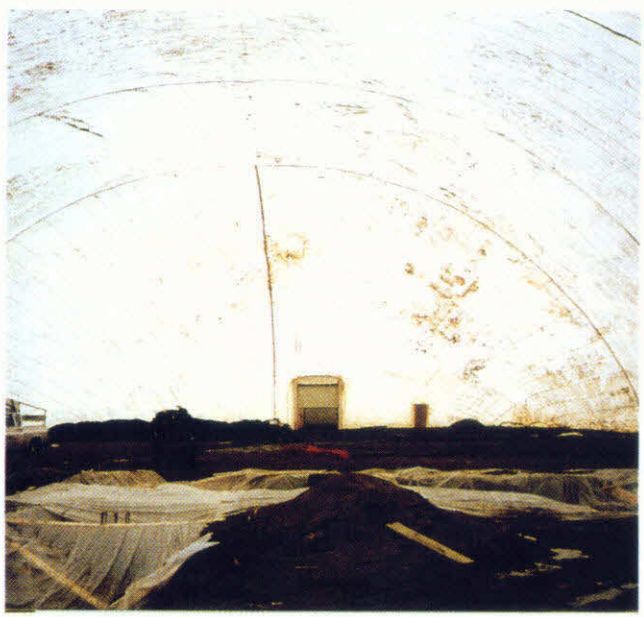
worth by expediting winter work, but the deciding factor in buying it in the first place was the owner's interest in improving the workers' environment, according to Lonny Pratt, construction manager for Ben & Jerry's. Pratt said the company has earned a reputation for caring about the safety and comfort of workers — a management philosophy that has brought it public accolades. A subject of a number of television magazine shows, Ben & Jerry's has recently been ranked among the nation's top employers in the latest *The 100 Best Companies To Work For In America,* authored by Robert Levering and Milton Maskowitz. This was based on pay and benefits, opportunities within the company, job security, workers' pride in their jobs and the company, openness and fairness within the company, friendly working atmosphere, the presence of on-site child-care for employees' children, and a cap on executive salaries.

Inside the air structure, Pratt noted, workers labor in comfort and safety. Temperatures hover around 55 degrees regardless of weather outside, and the frequent air exchanges prevent the build-up of carbon monoxide from the operation of construction machinery. Loader and excavator operators and supervisory personnel wear Leak-Tec Carbon Monoxide Sensitive Indicators. These safety devices, which change colors to warn of concentrations of the deadly gas, would trigger an evacuation of the area, but it hasn't been necessary said Pratt, who expressed confidence in the BABFAR heating system.

"The heater flames are outside the building, so there's no carbon monoxide from the heaters themselves. BABFAR's Representative Paul Rizzo said the air exchanges provided by the heaters would also get rid of carbon monoxide from construction equipment, and he was right. They are a great company. Their heaters do what they say they'll do, and they stand behind their product," said Pratt.

Work began on the ice cream plant

Air is introduced via duct work from 2 heaters. Louver would shut down and retain air if heater malfunctioned, insuring constant balloon pressure.



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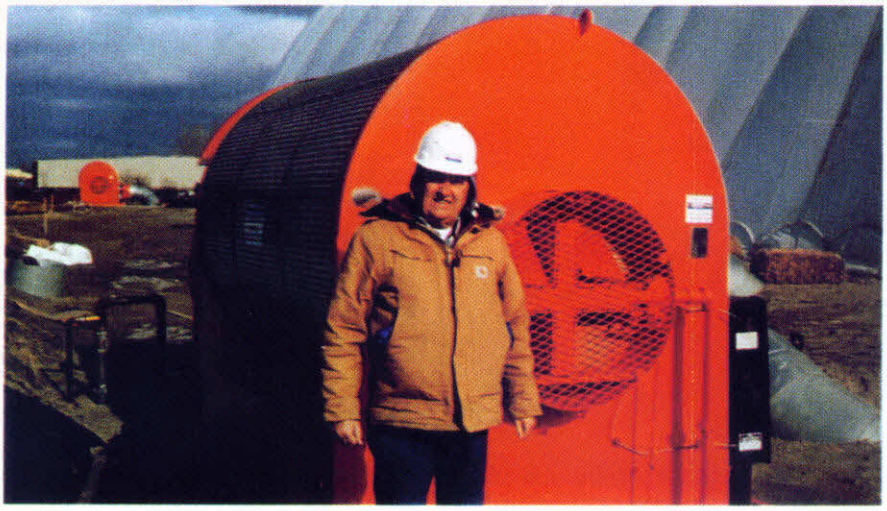

Thermal C/M Services' Mike Duke stands before one of two 4.5-million-BTU natural gas heaters supplied by BABFAR Equipment to inflate and warm the dome.

Bubble being inflated and heated simultaneously by BABFAR Equipment.

This is pressurization!!!

Ben & Jerry's Construction Manager Lonny Pratt wears a Leak-Tec Carbon Monoxide Sensitive Indicator to ensure a safe working atmosphere inside dome.

last November, and the project is expected to be completed by February 1994. Webber/Smith Engineering of Lancaster, PA, the parent company of Thermal C/M Services, Inc., performed the detailed engineering for the facility. Wright-Morrisey is handling the general site work and prepared the area for the air structure. Atlantic Testing Labs is checking concrete quality, soil compaction and rebar placement.

As this report went to press, bids for the mechanical, electrical, steel erection, masonry, roofing and other work on the building project were about to be opened, as the fast-track project progresses. This will be the third manufacturing plant for the Waterbury-based Ben & Jerry's, the 12th largest employer in Vermont. According to *Vermont Business Magazine*, the company had sales of $77 million in 1991 and $97 million in 1992, a 25 percent increase in a period when many Vermont firms are simply trying to survive.

"The recession has not seemed to affect Ben & Jerry's," said Pratt. "They just can't make the ice cream fast enough to meet the demand."■