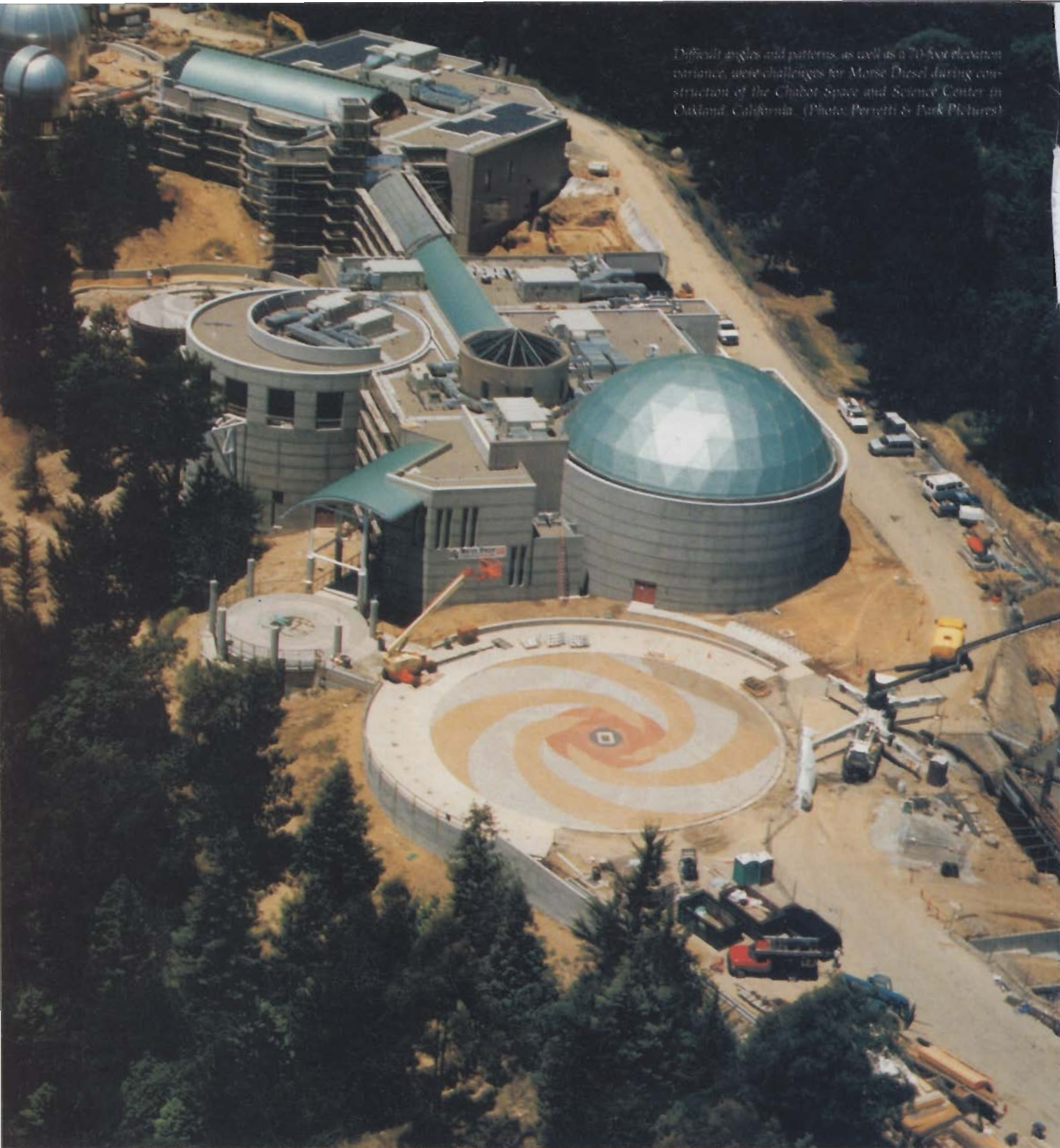


*Difficult angles and patterns, as well as a 70-foot elevation variance, were challenges for Morse Diesel during construction of the Chabot Space and Science Center in Oakland, California. (Photo: Perretti & Park Pictures)*



# Oakland's Chabot Space and Science Center

GETS FINISHING TOUCH BY MORSE DIESEL

BY LOREN FAULKNER

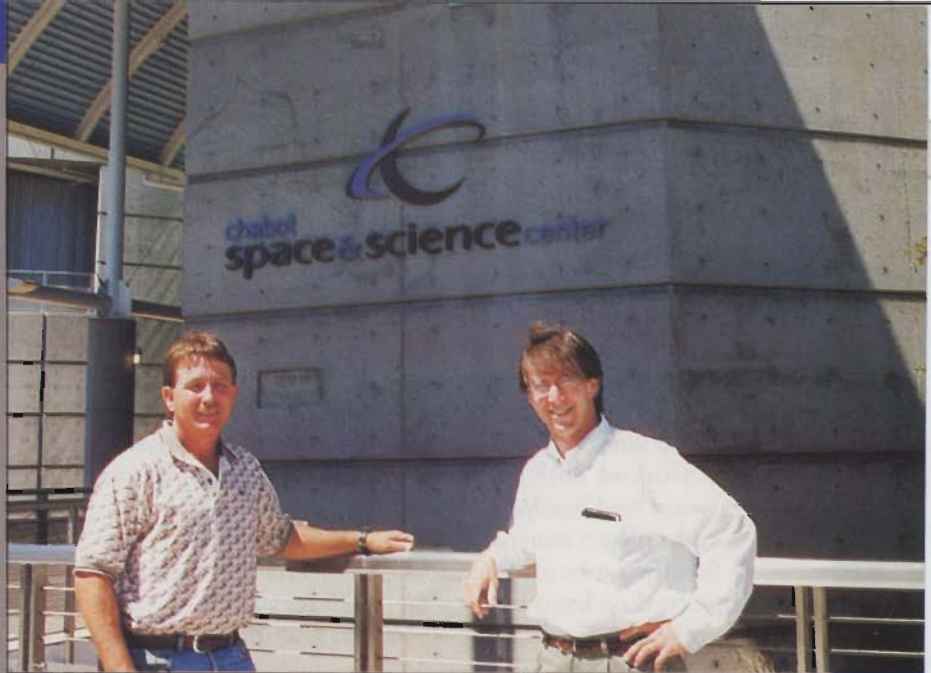
The recently completed Chabot Space and Science Center (CSSC) is located in one of the best spots within the Bay area of Northern California. A visitor to the state-of-the-art center can not only appreciate its excellent architecture created by Gerson/Overstreet, but also take in the view of San Francisco from the high ground within an evergreen forest of coast redwoods. Many visitors have taken advantage of just that since its official opening a few months ago in Oakland's Joaquin Miller Park.

Morse Diesel, the general contractor, is just putting the finishing touches on at this point after overseeing the entire construction of the 85,000-square-foot complex on 13 acres of sloping, rocky terrain. Although construction costs were close to \$30 million, the entire project is estimated to be valued at over \$75 million because of all the specialized equipment, including the planetarium projector, Mega Max theater equipment, and telescopes.

The new venue is a teaching and learning center that serves the general public, students and teachers. This is a continuation of CSSC's mission since 1883 of expanding public awareness of and teaching various aspects of the physical and natural sciences.

It's a place, for example, where kids can learn and experience what it is like to plan, launch, and execute a space adventure at the Challenger Center for Space Science Education. The CSSC complex includes many other types of exhibits: a 270-seat planetarium and 210-seat domed "Mega Max" Science Theatre; environmental amphitheater; three observatories, housing 8-inch, 20-inch, and 36-inch telescopes; three exhibition halls, some of which will house Smithsonian Museum exhibits. The 36-inch telescope will be the largest in the nation available for viewing by the general public.

For on-line users, a virtual science center will be available. Also,



Rob Axton, project superintendent, left, and Joel Josehart, senior project manager with Morse Diesel, in front of the entrance to the Chabot Space and Science Center. (Photo: Perretti & Park Pictures)



CSSC is housing certain Smithsonian Museum exhibits. This telescope belonged to scientist Albert Einstein. ▶



Fog and boulder removal were another construction challenge. (Photo: Perretti & Park Pictures)

an integrated biology/chemistry/physics discovery and computer lab has been built, as well as a three-tiered parking structure, café and catering kitchen, dining terrace and gift shop. Two of the seven new buildings are a domestic water station and a sewage treatment facility.

"Some 80 sub-contractors and vendors worked with us on the project," said Joel Josehart, Morse Diesel senior project manager. "And nearly 50 other subs and vendors were involved on the owner's side of the work."

Funding of the project is both public and private, coming from the Joint Powers Agency set up in 1989-- a partnership between the city of Oakland, East Bay Regional Parks District, Oakland Astronomical Society, and the Oakland Unified School District, and the CSSC Foundation. Other private entities have donated funds, as well.

### CHALLENGES

"The variance of the terrain is 70 feet from one end of the site to the other, a significant factor

in the construction of the site. That, combined with the complexity of the geometric design were the main construction challenges," said Josehart.

"It's virtually all angles, circles - nothing that would make for a standard type production. And because of the site's elevation, we had to build some walls, then back-fill in order to gain access to the first floor construction.

"Just a simple maneuver, like getting concrete up the hill, takes longer because of the terrain. Because of the steepness of the grade, concrete trucks could not be filled to capacity because spillage would occur on the way up."

Fog was a factor in the construction. "There were times when we had to stop work because the fog was so dense; survey work across the site was not possible during those times," he said.

Forming work for the two concrete "tanks" -- the planetarium and the Mega Max theater-- was a challenge, as was coordinating the scheduled owner-furnished items (such as the \$3-million Zeiss projector for the 243-seat planetarium) for placement.

All new utilities had to be brought to the site, difficult because trees and many boulders had to be removed. In addition, there were no lines for power, sewer, telephones, or storm drains. Some had to be brought in from nearly three-quarters of a mile away.

Finally, Josehart keeps a full-feathered arrow stuck in his trailer office wall just above his head as a humorous reminder that a 60-year old archery range is a few yards away in the forest.

"For safety's sake, we actually had to shut down three of the targets during our construction because of their close proximity to our work area," he says.

Construction began in April 1998, and CSSC officially opened in August 2000. □



Steep grades required excavators to construct job site access areas. (Photo: Perretti & Park Pictures)

A 245-seat Mega Max theater and a 210-seat planetarium are part of the CSSC complex. (Photo: Perretti & Park Pictures)

