UCSC — 1990 - 1999

Caverns add to cost of UCSC building

University uses cement to plug underground holes

By JOHN ROBINSON
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SANTA CRUZ — Workers have begun filling a series of caverns with concrete after the formations were discovered beneath the new Earth and Marine Sciences Building under construction at UC Santa Cruz.

Shoring up the ground has cost several hundred thousand dollars and set back construction schedules, although UCSC officials say the $27 million project should be completed on time by fall of 1993.

"We've issued a order for the contractor to put pressurized grout into the ground," said project overseer David Tanza, a UCSC senior architect. "We'll use however much it takes."

Tanza said thus far about 5,000 cubic feet — about 20 cement truck loads — of concrete grout have been pumped into the area and pumping will continue for about two more weeks.

The weak ground, a series of caverns and fractured marble was discovered directly under the concrete foundation footings in January after a series of heavy rains. Tanza said water collected in the area and disappeared, eventually exposing a series of fractures.

The caverns are from 30 to 80 feet under the building and due to the extreme weight of the concrete and steel building they must be filled in, according to contractors.

After discovering the problem, engineers and hydrologists were called in to insure that filling the caverns would not cause a problem with the aquifer or underground drainage, Tanza said.

"There was concern about pumping grout into (the fissure system), but it was found that it is at the highest level (of the aquifer) and shouldn't affect it," Tanza said.

The compromised ground is common to the UCSC campus area, Tanza said. He compared the marble strata to that of a loaf of bread baking, where the dough expands and then voids and bubbles form.

"We did find similar conditions on the site during the soil boring exploration," Tanza said. "It's one of those things that on the surface sounds worse than it is. There are probably caverns all over the place under buildings (on campus) but it's a matter of how much soil you have between the footing and caverns."

For lighter wood and steel buildings such fissures and caverns are of less concern. The size of the fissures and caverns is unknown, Tanza said. To fill them, crews drill pipes into the ground through which pressurized grout is forced until the area fills. The process is then repeated at a higher level.

"We don't know how much it will take, but it is taking less then expected, which is a good sign," Tanza said.

While the grout is being pumped into the ground, construction has continued with the foundation concrete completed and five-story steel frame largely welded and bolted together.

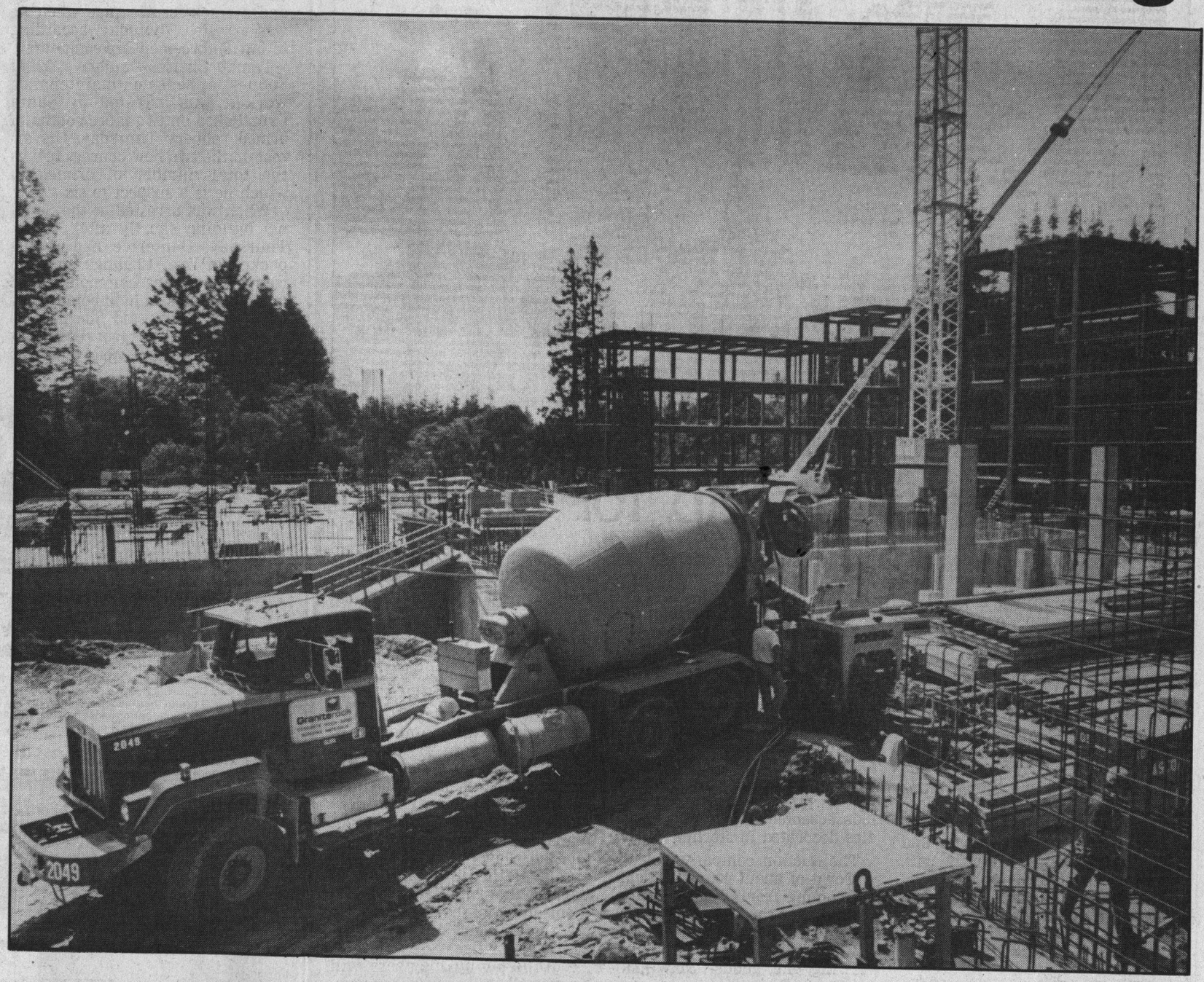
The 150,000 square-foot building will house laboratories, offices and classrooms. Its position is marked by a large white construction crane that towers above the surrounding trees and can be seen from downtown Santa Cruz.

The cost of the problem thus far has been contained within a "contingency fund" contained in the building budget and is not a significant financial problem, Tanza said. He did not have an exact cost, but described it as several hundred thousand dollars thus far.

"It's one of those construction things that happen," Tanza said.

It has been more of a problem for the contracting firm, SAE Continental Heller of Sacramento, which had planned to finish the project well ahead of schedule, according to Tanza.

Continental Heller officials refused to discuss the project, deferring to UCSC officials.



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Cement trucks fill up caverns at UC Santa Cruz, where a $27 million science building is under construction.