



JOHN STORMZAND/retail photographer

Jean Randolph, a petrographer, claims to have a fairly good success rate determining what causes concrete to fail.

Concrete sleuth gets down to basics

By Doug Funke
staff writer

Jean Randolph, a Beverly Hills resident, says she's the only person she knows of around here who works in forensic concrete petrography. She can't understand why anyone would find that exciting.

But all kinds of people on the construction scene — consulting engineers, builders and suppliers — seek out Randolph's expertise.

"A petrographer identifies and classifies rocks," she said. "Concrete is cement, water and aggregate — usually limestone in Michigan — mixed together and hardened."

"In 90 percent of my work something went wrong and they (clients) want to know why," Randolph said. "Some want me to do a quality control check — did we get what we ordered? Maybe some concrete is 15 years old. They want to know what went wrong so they know how to repair it."

Randolph, who earned a geology degree from the University of Texas and "apprenticed" in concrete petrography at the Portland Cement Association in Chicago, tries to find the answers.

HER MAJOR tools are two high-powered microscopes, basic knowledge and experience.

Clients send her samples of concrete several inches thick.

Randolph, working out of a laboratory in her basement, cuts a cross-section of the sample with a concrete saw. She then takes several hours to polish and smooth the cross-section.

After mounting the sample on a microscope slide, Randolph uses a smaller saw to reduce the sample to one millimeter thick, then uses a grinder to reduce the sample even further to about 20 micrometers.

"I can see all kinds of microscopic detail on the sections," she said. "I look for micro cracks, air content, aggregate quality, cement paste quality. I get the water/cement ratio for concrete."

RANDOLPH TAKES two weeks for a study and charges a fee of \$350. She doesn't take referrals from homeowners about driveway and sidewalk problems.

What does her study not determine?

Anything that needs chemical analysis or has to do with engineer-

ing or sub-base materials. But 70-80 percent of the time, she can reach a conclusion about what's happening within the material itself.

"You have to be a geologist," Randolph said. "You have to know micro optics, know about rocks. You have to be trained. It's not like you go to school. You have to get a job somewhere. Someone teaches you on the job. It takes years. Every job is different."

"You have to know what's going on in the field," she added. "Everything is so different. It takes years of accumulated knowledge."

Randolph decided to form her business, Construction Petrographics, as a way to stay active in the field while staying home with her young children. She learned while working for an engineering firm in

the metro area that clients had to send samples out of state for analysis.

No cases stick out in her mind. Or at least none that she wanted to talk about.

Randolph has analyzed chunks from parking decks, curbs, roads, septic tanks and buildings awaiting restoration.

"I find her a very astute business person, very energetic, extremely competent in her field," said Richard Melnychuk, technical services manager for St. Marys Peerless Cement Co. in Detroit and vice president for the Michigan chapter of the American Concrete Institute.

Karen Kalbaugh, a graduate geology student, works with Randolph.

Landscaping — the natural way

AP — For homeowners who want to attract wildlife into their yards, Country America magazine offers this advice for a workable plan.

The plan begins with a sketch of the property as it exists. Draw in the buildings and roadways and all of the existing vegetation — trees, shrubs, garden plants, hedges and grassy areas.

Next, determine what new vegetation is required to naturscape the property. There needs to be an abundance of large and small trees, large and small shrubs, plus tall and low growing plants, including annual and perennial flowers. If this cover also produces wildlife food, it's all the better.

Plantings need to be graduated from the tallest in the back to the shortest in the front. That doesn't mean a person can't plant trees and shrubs in the middle of the yard, but it does mean that what-

ever one plants should not hide the wildlife for which the plantings are intended.

Some folks simply let parts of their yard grow wild with fair success. But a better way is to plant desirable species. The recommended plants will vary by region, of course.

FREE OR low-cost information can be obtained from the state's conservation commission or department of natural resources. Some states even offer free plantings for wildlife.

Other helpful books are available at libraries, bookstores and lawn-and-garden centers.

(A complete guide to naturscaping is the Gardening with Wildlife kit available from National Wildlife Federation, 1400 16th St. NW, Washington, DC 20036-2266. Call 800-432-6564. The kit is priced at \$29.95, plus \$3.95 for shipping.)

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