[draining the rain]

DOMINICK RATTACASA STABS THE GROUND WITH A ROUND-POINT shovel, puts his boot on it and steps up with all of his 190 pounds. The shovel barely breaks the surface, its blade no match for the dense, glacial soil prevalent in northeastern New Jersey. Besides being tough to dig in, dirt like this doesn't soak up much water. Instead of percolating into the ground, rainwater obeys gravity and heads downhill, in this case straight for the house.

regular
maintenance keeps a drainage system working properly. Surface drains should be cleared frequently to remove sticks, lawn clippings and other flow chokers.

When it gets there, says Rattacasa, an excavation and landscape contractor based in nearby Hackensack, the basement turns into a reflecting pool. In heavy downpours, so much water speeds down the slope that little waves slap against the house, leaving muddy marks on the pale yellow stucco and turning the yard into a swamp. "There is constant ponding on the lawn," he says. "Hardly anything grows at all." That's not how a yard should behave.

A lawn that squishes underfoot "spells doom for plants," says Jud Griggs, president of the Associated Landscape Contractors of America. "When roots get saturated, they lose oxygen, and plants suffocate." Signs of trouble include stunted growth and wilted or black-edged foliage, he says. Saturated ground also breeds unsightly molds and fungi and, where water collects in shallow pools, mosquitoes.

Yet despite the damage poor drainage can do, fixing it doesn't rank high among home owners' landscaping priorities. "Humans are incredibly adaptable," says Tom Dunbar, president of the American Society of Landscape Architects. "A lot of people just ignore the water. They simply give up that part of their yard." Maybe the old phrase that describes the gradual disappearance of familiar objects, "becoming a part of the landscape," has its roots in just such drainage woes. In any case, contractors say that clients are often reluctant to sink money into something they can't see. They may also be unwilling to spend substantial sums on work that appears to be so simple: After all, they reason, how hard could it be to dig a few holes? But without better drainage, there will be little to admire in this backyard, which has kept Rattacasa busy off and on for the past two years. And without a professional to size up the problems and solve them correctly, a drainage "solution" could become much worse than the original problem.

To change the course of all that water, Rattacasa has brought in a small squadron of earthmovers—an excavator, backhoe, bulldozer, skid loader and dump truck—along with 160 yards of gravel, hundreds of feet of 4-inch perforated pipe and a

The bubble in the level signals part of the problem: a slope that sends storm runoff and snowmelt toward the house, where it not only floods flatter ground but also pours into the basement.

[drainingtherain]

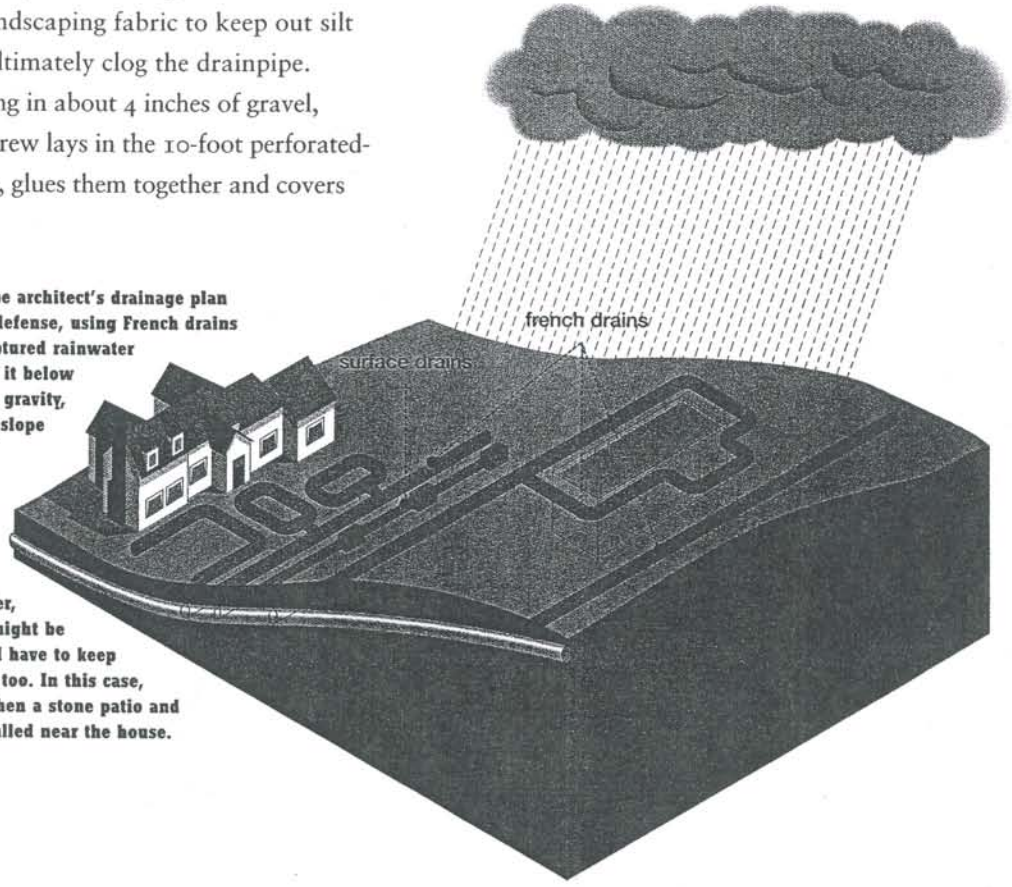
like a leak
in a roof, drainage problems in a yard can appear or disappear unpredictably. Before digging up the landscape, try to associate problems with a particular weather pattern.

blueprint of the new drainage system. The blueprint was developed by Charles J. Stick, a landscape architect based in Charlottesville, Virginia, who had already designed the park-like front yard of the house, dotting it with trees and shrubs indigenous to the region. His plan for the backyard includes patios, pathways, planting beds and dozens of trees, none of which can go in until the ground gets a lot drier.

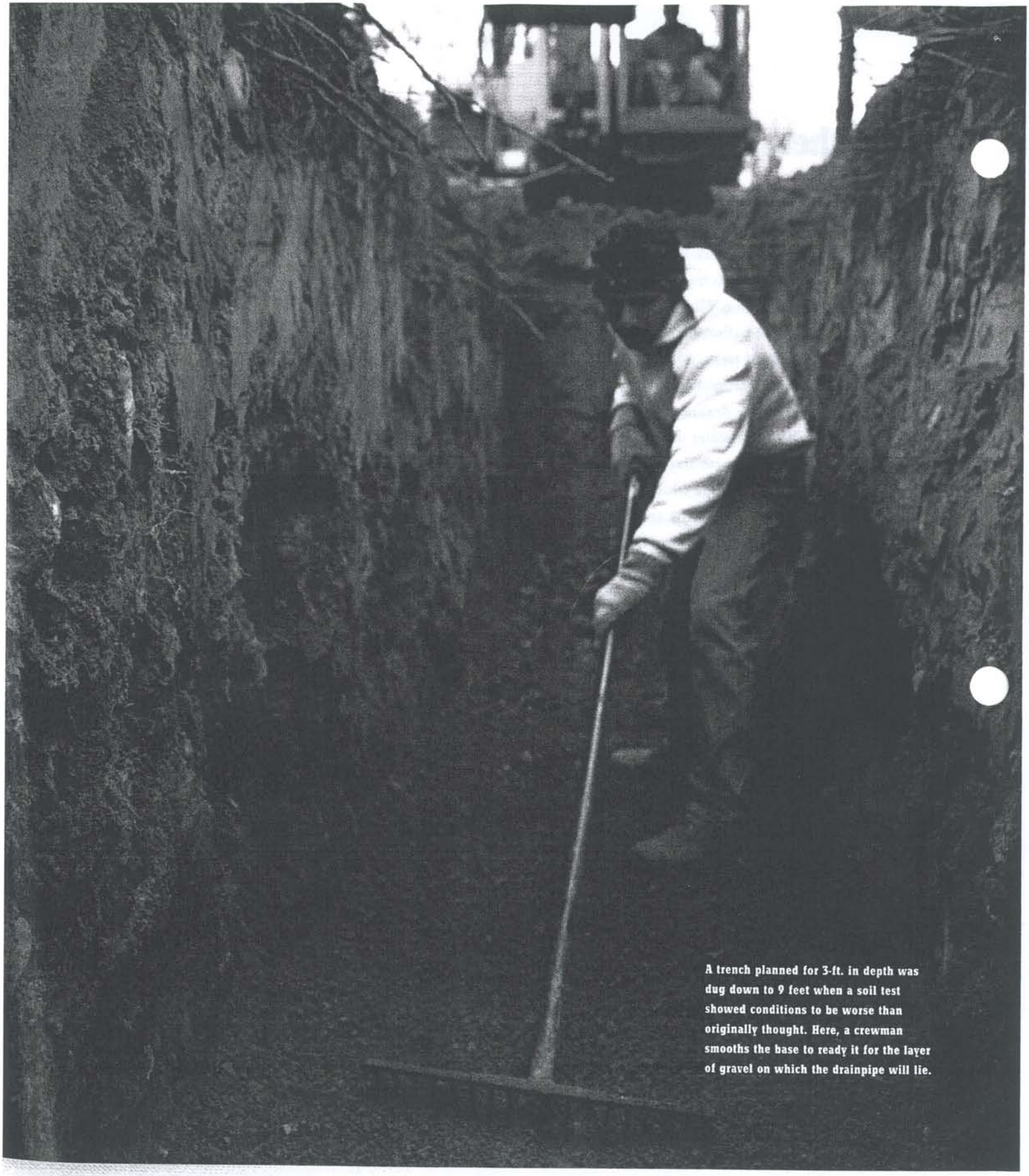
Stick's drainage system consists of subsurface water movers, called French drains; some cut across the top, middle and base of the slope while others wrap around those future patios and beds and an in-ground swimming pool. Each drain begins as a 3-foot-deep trench that gets lined with fiberglass landscaping fabric to keep out silt that could ultimately clog the drainpipe. After dumping in about 4 inches of gravel, Rattacasa's crew lays in the 10-foot perforated-pipe sections, glues them together and covers them with more gravel. On top of all that goes a 6-inch layer of topsoil, a drainage-friendly replacement for the hard-as-a-rock dirt that came from the trenches.

To collect as much surface water as possible, the 150-foot-long uppermost trench is completely gravel-filled and has no soil or sod on top. "Because there is so little percolation," says Stick, "an open trench like this is the most effective way to intercept water from the neighbors' yards." Eventually, English ivy and a hedge will grow to cover and hide the gravel.

Each run of perforated pipe ends at a solid 6-inch collection pipe that goes all the way down to a creek in the lowest corner of the front yard. Water that gets by this gauntlet of



A Network of Drains: The landscape architect's drainage plan battles water across four lines of defense, using French drains and surface drains. Each sends captured rainwater to a main pipeline that discharges it below the house. The system depends on gravity, not pumps, to work; thus the very slope that created part of the drainage problem is instrumental in the solution. Not all sites offer such topographically helpful slopes, however. If a down-slope lowpoint below the house can't be found to drain water, drywells or other types of drains might be required. The drainage system will have to keep up with future site improvements, too. In this case, more drains will go in later on, when a stone patio and a couple of planting beds are installed near the house.



A trench planned for 3-ft. in depth was dug down to 9 feet when a soil test showed conditions to be worse than originally thought. Here, a crewman smooths the base to ready it for the layer of gravel on which the drainpipe will lie.

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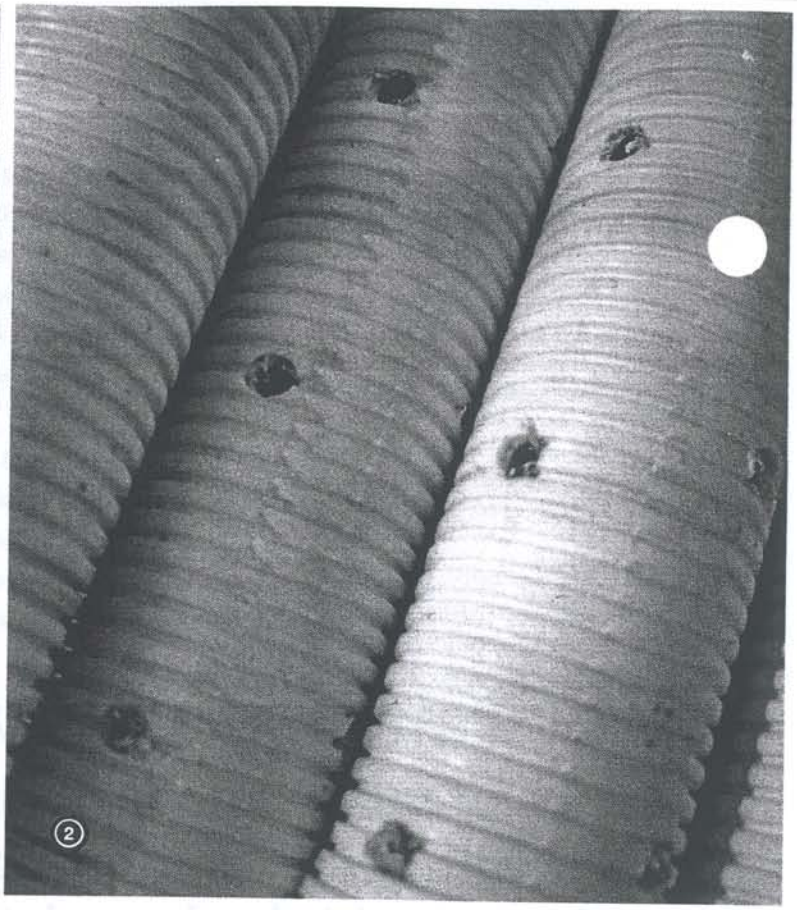
drains will be caught in a swale, a shallow channel that Rattacasa's backhoe carved between the house and the base of the slope. The swale has plumbing too: a string of three surface drains linked by 4-inch solid pipe buried just 6 inches underground.

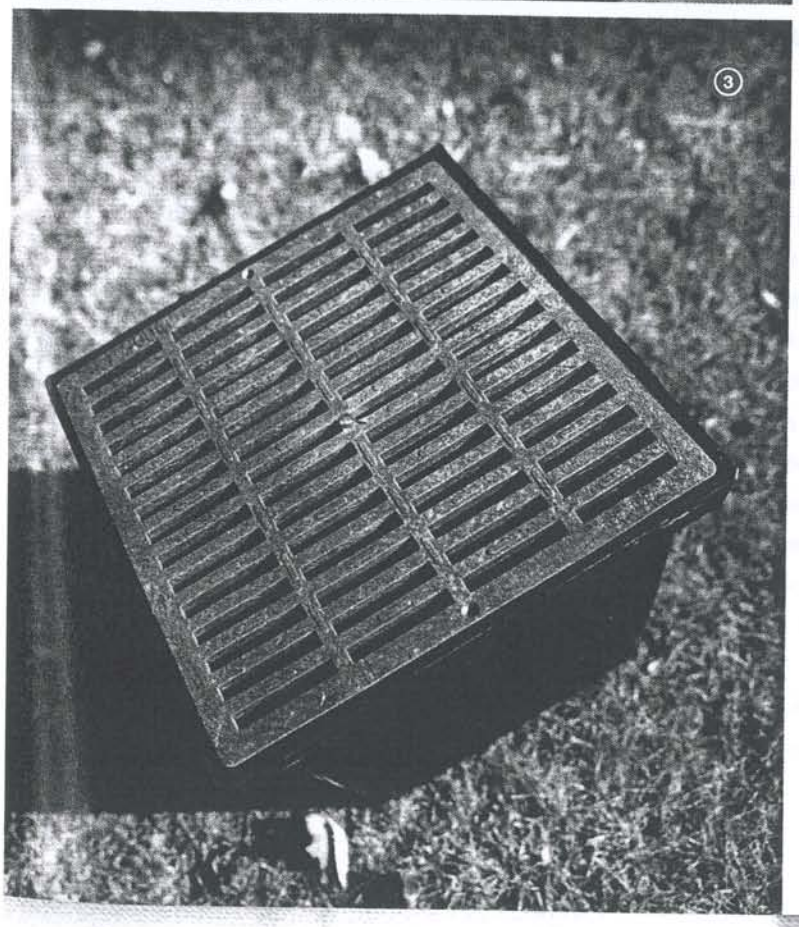
The swale will also fix a common yard defect: poor grading, a condition usually created when a site is first cleared. "Regardless of whether a house is brand-new or 100 years old, the yard is usually a result of how the builders left it," says Dunbar. Builders and owners alike put off or altogether avoid hiring a landscaper to shape the ground. But most problems can be corrected by regrading to create the right amount of slope, adding dirt to fill sinkholes or cutting a swale to reroute runoff. Sometimes, getting control of the flow requires reshaping the lay of the land entirely. The 10 feet of ground closest to the house should slope at least 6 inches downward, says Griggs, to keep water from seeping into the basement or flooding foundation plantings. Lawns require less of a grade: at least 1 inch of slope for every 5 feet of turf.

Before Rattacasa breaks ground for the first trench, he digs a deep pit for a perc test, which measures the soil's ability to absorb water. He hits an underground stream about 6 feet down, so he takes the trench deeper to get under the water. "We're trying to get the water before it gets to the house," he says. This land is wetter than most. "The builder hit so much water when he dug the foundation that he had to bring in 3,000 yards of dirt to raise the house." Low in organic matter, some of the fill was spread across the yard and compacted by machinery. To make the ground more porous, Stick has prescribed annual treatments with an aerator to pull out dirt plugs and replace them with pelletized gypsum and humus.

Once the drain system is installed—a job Rattacasa estimates will take four days—the real test will be the spring rains. If runoff overwhelms 600 feet of French drain, Rattacasa can add more. Leaving nothing to chance, Stick's plan includes vertical pipes—now capped just below the surface—that tie into the perforated pipe. To catch more rainwater and snowmelt, the verticals can be connected to the same kind of surface drains used in the swale. "This way, we know we'll have the drainage we need," says Stick. "It means the difference between having a garden and not having a garden."

« Contractors say that clients are often reluctant to sink money into something they can't see. But without better drainage, there will be little to admire in this back yard. »





Trench Warfare: Broad swaths of landscaping fabric line the drainage trench (1) to keep out silt. The durable material allows water to pass while serving as a barrier to dirt and other pipe-choking debris. The vertical pipe sticking out of the trench will be sawed off later just below grade and connected to a surface drain.

Pipe Line: Water that seeps through the landscaping fabric and into the gravel-filled trench will drain away through hundreds of feet of 4-in. PVC perforated pipe (2).

Rain Drainer: A surface drain (3) swallows water that collects at the base of a slope; a drainage system may incorporate several strategically-placed drains. Each one should be nestled into a hole so the grill will be flush with the final grade. A properly installed drain should withstand mower and foot traffic.