**'X-ray' machine breaks into golf**

By Mark Leslie

A new technology that surveys underground will help prevent some of the existing vague specifications and faulty judgment found in golf course construction, claims Charles Gockel of Agri-Systems of Texas, Inc.

Agri-Systems, a soil-testing laboratory in Tomball, Texas, and Environmentalists of Houston have introduced "non-destructive, subsurface survey of golf greens and other sports turf structures," Gockel said.

The technology is used in other fields. Archaeologists use it where they're looking for anything unnatural to an area. Foresters have used it to track the growth of a tree's root system.

Gockel believes faulty construction—most of which is accidental—is a major cause of greens failures.

"Saying a lot of the laboratory's work is forensic," Gockel added: "So many times courses were constructed and the folks didn't get what they thought they were paying for... Sometimes they put on their three-piece suits and find someone to sue. Sometimes they bite the bullet, feeling they thought what they were doing was right at the time."

Gockel said the first job for this subsurface survey is at a prestigious Mid-America golf club that just two to three years ago reconstructed some of its greens. "They have been non-performers since Day One," he said. "It was one of those 'better ideas.' A lot of these cases (of failure) have been done in-house. In this case the superintendent was told to keep his nose out of it... He got fed up and left."

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**Figures are in:**

**Construction rose again**

New course construction continued to gain momentum in 1990, according to National Golf Foundation figures illustrated here.

The graph, at right, shows the yearly rise in public, private and total number of courses built annually since 1986.

The chart below compares the number of daily-fee, municipal, private and undetermined courses either opened, under construction or in planning through the first 11 months of 1990, along with the same numbers for all of 1989.

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**New course construction 1986-90**

<table>
<thead>
<tr>
<th>Year</th>
<th>Public</th>
<th>Private</th>
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<tbody>
<tr>
<td>1986</td>
<td>131</td>
<td>54</td>
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<tr>
<td>1990</td>
<td>290</td>
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**Notes:**

- *All 1990 YTD figures as of Nov. 30, 1990*
- Source: National Golf Foundation
STERLING, Mass. — Bucking the trend of tying golf course building to abutting house lots, backers of Sterling Country Club say the $8-million project will be "strictly golf, a walk in the woods."

The 6,800-yard par 71 course, within an hour's drive of Boston, is scheduled to open in June.

The course will be semi-private and, according to president and general manager Richard H. Lowe of Sudbury, 170 memberships at $7,500 each have been sold.

Sterling is located halfway between Worcester and Leominster, off Route 190. Walter Lankauf Jr. of Sudbury, Lowe's public partner in the project, is co-owner of Mass Acres, a 360-acre public course.

"But based on what we've seen here in the lab, there is no better way where high rates of play are anticipated, and course longevity is desired. You have to follow the USGA spec to the limit or find some other way. But a "modified" USGA green is an oxymoron. If it's not it's not."

"You find people saying, 'What's all this organics for? We don't need organics down at the bottom of the greens mix. The roots won't go all the way down there. Let's just rototill some.' So you have 12 inches of greens mix laid on the gravel and rototill it in four or five inches. It usually ends up being too heavy at the very top, it holds too much moisture and impedes the oxygen flow into the system. They'll get three to five years out of it, sit back, scratch their heads, fire the superintendent and wonder what went wrong."

Gockel added: "In most cases with turf, the mistakes are hidden until the grass doesn't grow. The greens committee thinks it's the superintendent's fault. They (superintendents) don't have the respect they deserve."

"The unfortunate part about all this is that it takes time. You can do the worst job in the world initially and the first season you'll still have turf. And after that, it will start to deteriorate."

"It can easily cost $1 million to rebuild greens. Why not spend the $100,000 or whatever it costs up front for the choker layer and save the $1 million later on?"

As part of Agri-System's service it will now also write contract specifications for greens materials to help prevent a problem at the outset.

"Contracts should give a more definitive description for greens construction," he said.

"They'll get detailed on irrigation pipe. But when it comes to greens, they might use the words 'suitable material,' they might not list any gradations, they might use the generic 'organics' that could be anything from sawdust to Canadian peat."

"If you don't say much about it in a contract, it opens the doors to what you're going to get. You also get into a situation of who is in control. So many times no one is in control."

Gockel said his contract work would not detail earth-moving or irrigation or water wells, "but would add definitive paragraphs to that portion that pertains to greens construction. If you have a contract that's too loosely written someone may take advantage of it."