thought and numerous design studies. The process starts with a broad look at the best overall master plan and routing of the course and then narrows, focusing on the particular details and creation of each hole and its parts.

Evolution of a good design typically involves:
- Exploring the different layout plans and hole routings.
- Finding the best layout and routing.
- Working out detailed grading plans for forming the site to the necessary grades, slopes and desired shaping.
- Designing the details of tees, fairways, roughs, bunkers, water features, green complexes and the like.
- Deciding on types and location of various grasses, as well as new tree plantings.
- Designing an appropriate irrigation system.
- Locating cart paths, designing cart bridges, retaining walls and highly landscaped areas.
- Planning for the functional and sensitive siting of the clubhouse area.
- Creating a pleasant indoor clubhouse atmosphere.

Good construction

Architects always hope that excellent design is followed by good construction. This is not always the case, however.

The seemingly never-ending construction process is where the long, hard work takes place and where little by little, the site is transformed into a natural arena for the game. Some may think it's just cutting down a few trees, flattening land and planting grass. A course may be built with these minimal expectations, but obvious and unimaginative results will follow. However, an experienced builder with a reasonable budget shares high expectations with the owner and the architect and has the know-how to accomplish the task.

Good construction requires understanding the design and the goals behind it. It's important for a builder and his staff to have broad experience with other sites on which to draw.

Good plans show the work and the finished product, but many times the details of the site (a majestic oak tree near a green of an unrealized view from a tee) suggest an alteration during construction. Conscientious builders and architects know when to consider changes.

Good construction also plans for and responds to the elements of nature. Rain and site erosion is common when soil is exposed for months as it is moved, worked, and re-worked. Using quality construction methods are a must — building greens according to current United States Golf Association specifications; using proven underground drainage pipe and quality irrigation components; supplying sufficient topsoil in turf areas; and using high-grade fertilizer, seed and sod.

When good construction occurs, there's usually a positive working relationship between the builder, architect and owner. In such cases, the builder may make an extra effort to finish the job well. The final intricate shaping and detailing of tees, fairways, roughs, bunkers, mounding and green surfaces are critical because it sets the look, feel and play of the course for years.

Good maintenance

So the construction of your course is complete. The bulldozers have left, the grass is growing and the clubhouse is almost finished. You have the first three ingredients for a great course. The remaining final ingredient is how well you manage and maintain this living environment.

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<tbody>
<tr>
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<td>CITY</td>
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Date

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<tr>
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<th>10</th>
<th>20</th>
<th>30</th>
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<th>50</th>
<th>55</th>
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<tr>
<td>Daily Fee/Public</td>
<td>Semi-Private</td>
<td>Private</td>
<td>Resort</td>
<td>City/State/Municipal</td>
<td>Other Golf Courses</td>
<td>Golf Course Architect</td>
<td>Golf Course Developer</td>
<td>Golf Course Builder</td>
<td>University/College</td>
<td>Others Allied to the Field</td>
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2. Which of the following best describes your title? (fill in ONE only)

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</thead>
<tbody>
<tr>
<td>Golf Course Superintendent</td>
<td>Assistant Superintendent</td>
<td>Owner/Management Company Executive</td>
<td>General Manager</td>
<td>Director of Golf</td>
<td>Club President</td>
<td>Builder/Developer</td>
<td>Research Professional</td>
<td>Other Titled Personnel</td>
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3. What is your facility’s annual maintenance budget?

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<th>23</th>
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<tbody>
<tr>
<td>A  More than $2 Million</td>
<td>B  $1,000,001-$2 Million</td>
<td>C  $750,001-$1 Million</td>
<td>D  $500,001-$750,000</td>
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<td>27</td>
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<td>29</td>
<td>30</td>
</tr>
<tr>
<td>E  $300,001-$500,000</td>
<td>F  $150,001-$300,000</td>
<td>G  Less than $150,000</td>
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4. If you work for a golf course, how many holes are on your course?

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<th>30</th>
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<th>32</th>
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<tbody>
<tr>
<td>A  9</td>
<td>B  18</td>
<td>C  27</td>
<td>D  36+</td>
<td>E  Other (please specify)</td>
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<thead>
<tr>
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   03  30 Private
   04  40 Resort
   05  50 City/State/Municipal
   06  60 Golf Course Organizer
   08  70 Golf Course Developer
   09  80 Golf Course Builder
   10  90 University/College
   11  100 Others Allied to the Field (please specify)

2. Which of the following best describes your title? (fill in ONE only)
   12  10 Golf Course Superintendent
   13  15 Assistant Superintendent
   14  25 Owner/Management Company Executive
   15  30 General Manager
   16  35 Director of Golf
   17  40 Green Chairman
   18  45 Club President
   19  50 Director/Developer
   20  55 Architect/Engineer
   21  60 Research Professional
   22  65 Other Titled Personnel (please specify)

3. What is your facility's annual maintenance budget?
   23  1 A More than $2 million
   24  2 B $1,000,000-$2 million
   25  3 C Less than $150,000
   26  4 D $500,000-$750,000

4. If you work for a golf course, how many holes are on your course?
   30  1 A 9
   31  2 B 18
   32  3 C 27
   33  4 D 36+

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Continued from page 71 annually on a maintenance budget with a large, qualified staff and ample modern equipment with attention to every detail. On the other hand, owners with modest expectations and budgets supply limited maintenance staff, equipment and expertise for costs under $300,000.

The degree (and therefore cost) of maintenance practices should have been generally determined when you began the project. Aspects that have an impact on maintenance are:

- Have you built a public or private course?
- How many rounds do you expect?
- Who are your typical golfers?
- What do you expect to charge your customers? Obviously, many private and resort courses charge higher fees to maintain excellent conditions (which their customers demand), while smaller-market public courses operate on tight budgets which simplify their maintenance.

Some course designs demand high maintenance because of the types of grasses selected; the severity of slopes and mounding of turf areas, which must be cut by slower methods; the extent of fairways and rough area to be irrigated, cut, fertilized and aerated; the number of bunkers; and the special plantings of trees, shrubs, and flowers.

Good maintenance doesn't always mean large budgets. It also depends on the type of course, and the wise decisions and practices of the superintendent. As an architect, I'm saddened to see a well-designed and built course go downhill because of poor care.

Golfers respond to well-maintained courses — they will pay more and play them more and enjoy their experiences more.

Grant Wencel is a golf course architect based in Lincoln, Neb. Two of Wencel's newest designs, Stone Creek and Eagle Hills, opened last summer in Omaha.
Want a new source for pest information?

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Termites, cockroaches, rodents, even poison ivy and other nasty weeds. They're all pests, which means they can cause real problems that pose health and safety risks to children and adults. The good news is now you've got the Pest Facts Information Center at www.pestfacts.org. It's a handy resource discussing the problems caused by pests, as well as the safe and responsible use of urban pesticides and related issues. So don't just sit there...log on.
Leaders

PEOPLE ON THE MOVE

Scott Boutilier was named business manager for Wellmark International's Zoecon Professional Products and Starbar divisions.

Western Golf Properties named Randy J. Duncan as director of golf for Heritage Palms Golf & CC in Indio, Calif.

Jeff Davis, superintendent at Sanctuary GC at WestWorld in Scottsdale, Ariz., won the 2001 Environmental Steward Award for the Cactus and Pine GCSA from the GCSAA.

The GCSAA will sponsor Senior PGA Tour professional Jim Colbert for the 2001 season.

Tim Kahle, a senior in turfgrass science at Purdue University, was awarded the $5,000 Mentor Scholarship by the Midwest Regional Turf Foundation based on his academic performance, leadership in the student chapter of the GCSAA and work experience in the industry.

The Florida Turfgrass Association gave Michael McLaughlin, vice president of golfbusiness.com, the Wreath of Grass Award for service in the Florida turfgrass industry.

The Midwest Association of Golf Course Superintendents is celebrating its 75th anniversary this year.

Gregory Hyland was named as chairman and CEO at Textron Golf, Turf & Specialty Products.

The Golf Course Builders Association of America elected seven builder members and five associate members to its board of directors. The new builder members are: Larry Brown, Bangor, Maine; Glen Caverly, Howell, Mich.; Joe Niebur, Colorado Springs, Colo.; Gary Paumen, West Palm Beach, Fla.; Dave Ryan, Ijamsville, Md.; Tom Shapland, Hercules, Calif.; and Dale Siemens, Fresno, Calif. The associate members are: Steve Christman, Brea, Calif.; Rick Elyea, Canby, Ore.; O'Brien McGarey, Denver, Colo.; Tom Sasser, North Palm Beach, Fla.; and Jon Truttman, San Marcos, Calif.

Let us know about your people on the move. Send information/color photos to Golfdom's Frank Andorka at 7500 Old Oak Blvd., Cleveland, 44130. Fax information to 440/891-2675 or e-mail to fandorka@advanstar.com.

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CIRCLE NO. 135
Seeder
First Products offers the Seeda-vator, which functions as an overseeder or primary seeder. It loosens and prepares a seed bed and features great seed to soil contact, according to the company. It includes an adjustable roller to gauge tine depth.

For more information, contact 800-363-8780, www.1stproducts.com or CIRCLE NO. 200

Area calculator
Forestry Suppliers offers the X Scape, an area calculator to instantly measure square footage. The calculator accurately measures greens, tee boxes and bunkers based on a three-component system that uses radio frequencies to measure straight angles from a perimeter to a fixed point, then calculates and maintains a summary total of the total area in feet or meters. You simply place the yellow 360-degree transponder onto its staff which is then positioned in the pin slot of a cup. Measurements are made by walking the perimeter with the X Scape calculator and gathering readings by aiming the hand unit toward the transponder.

For more information, contact 800-647-5368, www.forestry-suppliers.com or CIRCLE NO. 201

Humic acid
Growth Products offers 12 percent Humic Acid Plus Amino Acids, a high-quality, easy-to-use organic matter source. The product is derived from Leonardite, a rich and active source of humic acid.

The product is blended into a homogenous liquid, which also includes natural plant extracts, to provide additional organic carbon sources that enhance soil quality and plant growth, according to the company. The high concentration of active, soluble humic acid is an effective tool for correcting soil compaction and freeing up micronutrients that are bound in the soil.

For more information, contact 800-648-7626, www.growthproducts.com or CIRCLE NO. 202

Sprayer
The JRCO 30-gallon Zero-Turn Sprayer is a tow-behind unit. Used with the company’s front-mount electric broadcast spreader, it can make a zero-turn mower into a complete application vehicle, according to the company. The sprayer has a 3.5-horsepower engine. The three-section breakaway boom has 5-, 8- and 11-footspray patterns.

For more information, contact 800-966-8442, www.jroinc.com or CIRCLE NO. 203

Rolling system
Turfline offers its True-Surface Universal Design Vibratory Greens Rolling System, which features a single set of rollers that adapt to fit most triplex greens mowers in minutes. To fit a different mower, a superintendent must simply change the mounting hardware. Vibration rolling disperses dry sand from turf and saves reels and bed-knives, according to the company.

For more information, contact 800-443-8506, www.true-surface.com or CIRCLE NO. 204

GPS software
CTN Data Service offers Precision Course Management, a Global Positioning System mapping software package. The software gives superintendents the ability to GPS map their courses and track products (fertilizer, pesticides, etc.) applied to their courses. The software also features an equipment area for superintendents to track maintenance equipment and parts used in repairing the equipment.

Weather data can also be tracked and printed or stored for future reference.

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