I would like to receive (continue to receive) Golf Course News free of charge
(Free to qualified contractors. U.S. only)
☐ Yes  ☐ No
Signature________________________
Date__________________________
Name__________________________
Title___________________________
Company_______________________
Address________________________
City__________________________State  ___ Zip________________
Phone________________________Fax_________________
E-mail _______________________  

GIE Media will only use your e-mail address to contact you with relevent industry or subscription information.
If you do not want to receive e-mail from trusted 3rd parties, please check here. ☐

What is the best way to contact you for future renewals?
  ___________email  ___________fax  ___________telephone

GIE Media Inc will only use your email address to contact you with relevant industry or subscription information. If you do not want to receive email from trusted 3rd parties, please check here. ☐

To request your Free subscription to Golf Course News please fill out this form completely and fax back to: 216-961-0364 or 216-961-0594 or mail to: Golf Course News PO Box 5817 Cleveland, OH 44101-0817.
construction, a bypass drainage system can and should be installed. A bypass system is a series of narrow vertical trenches installed in a green on 6-foot to 10-foot centers. Small diameter pipe is installed, and the trenches are backfilled to the surface with a rich, well-drained sand based mix. Some installers will use straight sand to backfill the trenches, but the drain lines often are visible when sand is used. Bypass drainage systems have been installed on hundreds of greens with good to excellent results.

Case study 2: Sand based green with organic fouled surface
One of the most common problems seen with sand-based greens is the excessive accumulation of organic matter. When in excess, organic layers can decrease drainage and increase capillary porosity at the expense of aeration porosity. Gas exchange across the surface is likely compromised as well. Symptoms of excess surface organic matter include shallow rooting, wet surfaces, and in some cases, black layer. (See the top-middle photo above.)

This case involves a golf course built in the early 1990s with United States Golf Association greens. Throughout time, a layer of organic matter had accumulated to the point where the physical properties in the surface were compromised. The results in the data table (page 60) show that the infiltration rate in the surface three inches was low. The aeration porosity was low, and the capillary porosity was high – classic data where surface organic matter is high.

Taking a look at the data from samples taken from 4- to 7-inches deep, one can see that all of the physical properties are favorable. Therefore, the problems on this green appear to be limited to the surface. Reconstruction isn't necessary unless there are other issues with the green, such as excess slope, small size or inadequate cupping space.

There are two options to improve this situation. The more common approach would be for the superintendent to embark on an aggressive aerification and topdressing program. While disruptive to playing conditions, this can reduce the organic matter at the surface and improve the surface growing environment throughout time. There are times, however, when the amount and/or depth of organic matter might be too much to remove by these conventional means.

Another approach, which was taken in this case, is to remove the surface organic layer. New mix is brought in to bring the surface of the green to grade. The new mix is lightly tilled into the surface of the existing mix to prevent an interface. After the green surface is floated out, the green is seeded, sprigged or sodded. Aside from giving the green a fresh start, this option offers the opportunity to introduce newer turf cultivars.

Case study 3: Old USGA greens
The USGA specifications for greens construction have been used in the industry since the early 1960s. Many changes have been made since the original specs. It's likely that a USGA green built in 1960 is much different than one built nowadays.

In this case, a USGA green was built in the early 1960s, and the root zone was composed of a mix of coarse sand, topsoil and a small amount of peat. Throughout the years, a sand-based topdressing heavily modified with peat humus had been used to the point that a 3- to 4-inch layer existed at the surface of the green. (See the top-right photo above.)

The results in the data table (page 60) show that the top three inches of the green had a high organic matter content. As a result, the infiltration rate was low, the aeration porosity was low, and the capillary porosity was high. Unlike the first case study, the topdressing used on this green did little to improve the physical properties in the green. Rooting in this green was shallow.

The physical properties in the subsurface layer also were poor, despite the mix being about 85 percent sand. While not shown in the table, the density on the mix was extremely high, about 1.8 g/cc. The mix was compacted severely, and as a result, had a low infiltration rate. Compacted soils will have a low total porosity, with most of the pores being small capillary pores. The results on the aeration and capillary porosity reflect this.

Speculation only can be made about the history of this green, but it looks like this has always been a problem green. The composition of the original mix is such that it would be prone to compaction, and compacted it is. When new, the green surface probably was hard and wouldn't hold a shot. To correct this, a topdressing program was initiated and carried out for several years using the high organic topdressing material. The green is likely soft now.

While a program of aerification and topdressing might be helpful, the surface and subsurface conditions of this green warrant nothing short of reconstruction.

Problems with greens can be caused by many factors, poor soil physical properties only being one. These three cases are examples of where soil physical testing identified a problem and offered guidance for corrective action. GCN

Dr. Norman Hummel is president of Trumansburg, N.Y.-based Hummel & Co. He can be reached at 607/387-5694.
**Prodiameine herbicide**
- Cavalcade 65WDG pre-emergence herbicide
- Contains active ingredient prodiameine
- Offers long-residual pre-emergence control
- Can be applied in fall for weed prevention the following season
- Prevents grassy and broadleaf weeds such as crabgrass, goosegrass, *Poa annua*, spurge, purslane and knotweed
- Controls in warm- and cool-season turfgrasses and ornamentals

*Sipcam Agro USA*
Circle 200 on reader service form

**Two-way extended range radio**
- Talkabout T7400 sports series
- Seven-mile range; 2-watt power
- Eight National Oceanic and Atmospheric Administration weather channels
- 22 frequencies and 99 interface eliminator codes
- Equipped with earbuds and voice activation for hands-free communication

*Motorola*
Circle 201 on reader service form

**Bulk pneumatic blower**
- BB200 Bark Blower model
- Can be transported as a skid mounted unit or towed on its optional trailer
- Delivers more than 8 cubic yards of bulk material per hour
- 6.5-cubic foot capacity hopper with hydraulic functions complete with reversing capabilities,
- Dual feed rolls for consistent material deliver
- 100 feet of 3-inch hose

*Finn Corp.*
Circle 202 on reader service form

**Edger and cable-laying unit**
- Common platform and interchangeable blades and shields allow for an easy transition between the BedBug landscape edger and cable layer
- Each unit is powered by a 5.5-hp Honda engine with a centrifugal clutch
- Adjustable 2- to 4-inch cutting depth
- Carbide tipped blades provide consistent cutting

*BlueBird*
Circle 203 on reader service form

**Pozzolan soil amendment**
- Lassenite-I formula
- Reduces the frequency of watering and necessity of fertilizers
- Allows soil to absorb and hold water
- Promotes deeper roots and increases the number of fine root hairs

*Western Pozzolan*
Circle 204 on reader service form

**Tree insecticide**
- Pointer II formula
- Works with an injection system to treat trees’ active layer without drilling
- Provides season-long control of numerous tree pests including adelgids, borers, beetles, aphids and lacebugs
- Doesn’t require temperature-regulated storage

*ArborSystems*
Circle 205 on reader service form
KingStone signs and markers
- KingStone material creates the natural look of stone
- All shapes, sizes and thicknesses available
- Seven standard colors with ability to match custom color
- Little maintenance necessary
- Ideal for tee signs, entrance signs, custom directionals and markers

Landmark Golf Course Products
Circle 206 on reader service form

Directional signs
- Sand-cast, 6-inch-by-10-inch arrows and 4.5-inch-by-10-inch informational signs with raised polished letters
- Available in bronze or aluminum
- Messages printed in raised, polished letters with protective coating
- Popular messages available
From Tee To Green
Circle 207 on reader service form

One-piece polyethylene signs
- DuraCarve product line of cart, tee and directional signs and markers
- Available in color combinations and 20 standard sizes; custom colors and legends available
- Thermoplastic polyethylene construction resists impact, stains and severe weather, and outlast wood, metal and typical laminates

Four Season Signs
Circle 208 on reader service form

Tee posts
- Made of sandstone to compliment the natural landscape
- Custom messages and designs offered
- Available in a variety of sizes, shapes and colors

G.G. Markers
Circle 209 on reader service form

Fairway signs
- Available in five standard sizes, three standard color combinations and 20 standard messages
- Custom designs are available
- Messages are engraved in ironwood, a dense, South American hardwood that resists rotting, warping and will survive insect infestation for several years
- Never needs painting

Great Lakes Golf Course Products
Circle 210 on reader service form

Stainless-steel signs and accessories
- Stainless-steel design to withstand harsh environments
- Won't corrode, pit, patina or rust
- Custom shapes available

Designer Golf Co.
Circle 211 on reader service form
Golf course signage
- Available in redwood, bronze and natural stone
- Ability to customize
- Almost every size and color available

National Golf Graphics
Circle 212 on reader service form

Retractable range board
- Cast metal distance marker
- Can be adjusted easily from a hidden, in-ground position to an upright position in seconds
- Offers patrons an accurate and readable distance to their targets from almost anywhere they’re positioned on the range

OnCourse Media
Circle 213 on reader service form

Dura-Flex signs
- Easy-to-read signs designed to flex and withstand all golf course conditions
- Three-dimensional letters are molded into the sign so printing won’t scratch off
- Corrosion-resistant spikes are formed by a single “U” shape, stainless-steel rod and are molded into the resin for maximum strength
- Available in three color schemes: white with green letters, green with white letters and yellow with black letters

Par Aide
Circle 214 on reader service form

Customizable signage
- Customizable signage by size and shape
- Can choose from a colored logo and detailed graphic, or just hole number and par
- Signs are durable and maintenance free

Shot Selector
Circle 215 on reader service form

TurfStone staff and memorial signs
- Photo-quality, laser-engraved images available on 9-inch-by-12-inch TurfStone signs
- Can be used to showcase course superintendents, golf professionals, club presidents, board members or to honor benefactors or mark memorial plantings
- Granite-like appearance; molded from thermoset polyester that won’t crack or fade
- Horizontal and vertical formats are available with or without frames
- As many as three colors can be used for laser-engraving text and logos on a finish of gray granite, green granite or terra cotta

Standard Golf
Circle 216 on reader service form

Sprinkler-head yardage tags
- Custom-made tags available for all sprinkler brands and types
- Made with 1/8-inch-thick, scratch-resistant material
- Highest available UV rating
- Highly visible, but mounted flush with top of sprinkler head for protection from turf equipment

Top Dog Golf
Circle 217 on reader service form
Air- and liquid-cooled engines

- Vanguard V-twin Big Block models available in 25-, 27-, 29-, 31-, 33- and 35-hp engines
- An advanced debris management system allows engines to run cooler and cleaner
  - Steel-backed aluminum bearings contribute to increased load capacity and reduced engine noise
  - Lightweight aluminum block increases power-to-weight ratio by reducing equipment weight
  - A centrifugal, multi-stage industrial air cleaner provides engine protection, especially under dirty, dusty conditions

Kawasaki Motor Corp.
Circle 221 on reader service form

Small engines

- Three models available with high parts interchangeability among all models
- The DF972 is a three-cylinder, dual fuel engine with a 29.5-hp, liquefied petroleum gas version or a 31-hp gasoline version
- The D902-E three-cylinder engine is available in 20.6-hp or 23.5-hp models
- The Z602-E two-cylinder engine is available in 13.8-hp or 15.8-hp models
- Drilled cooling passages between cylinders provide cooler piston and piston ring temperatures for longer engine life and stronger reliability
  - Clean-air compliant
Kubota Engine America
Circle 219 on reader service form

Overhead valve engines

- GX series offers reliable, easy starting and fuel-efficient power for a variety of commercial applications
- 21 models available in GX series, ranging from 3 to 24 hp
- Available in horizontal or vertical shaft and in single-cylinder or V-twin versions
American Honda Motor Co.
Circle 220 on reader service form

Commercial engine series

- FH KAI line includes four models ranging from 13 to 19 hp
- Internally vented carburetor design to ensure longer air filter maintenance intervals and easy filter installation
- Features small diameter passage holes to eliminate engine grass ingestions and grass plugging
Kawasaki Motor Corp.
Circle 221 on reader service form
Spray repellant
- Ready-to-use, Tree Guard formula sprays on milky and dries clear
- Non-toxic to plants
- Used to protect all trees, shrubs and flowering ornamentals
- Unique latex polymer carries the active ingredient, Bitrex, and resists rain and won't wash off for as long as 100 days

Becker Underwood
Circle 222 on reader service form

Precast concrete buildings
- Manufactured by Carr Concrete
- Arrive ready to use, no on-site assembly required
- Engineered to resist heavy winds, snowfalls and ice loads
- Won't rust, rot or burn
- More than 50 standard models to choose from, including standard storage and restrooms
- Can be customized to meet specific needs

R. W. Sidley
Circle 223 on reader service form

Spotrete F Turf fungicide, animal repellent
- Contains the ingredient thiram, which renders treated plant parts distasteful to deer, rabbits and rodents
- Deters feeding and damage to turf, shrubs and ornamentals
- One application protects treated parts for about one to three months
- Can also be used for the prevention and control of common turf diseases such as brown patch and snow mold

Claty Chemical
Circle 224 on reader service form

Goose repellant for turf
- Migrate repels geese from areas such as golf courses, lawns, parks, athletic fields, cemeteries or any other turf area where birds graze
- Makes treated turf unpalatable to geese forcing them to feed elsewhere
- Available in one-gallon containers

Gemplers
Circle 225 on reader service form

Roof and wall panels
- DuraRib is a 36-inch-wide roof panel with 1 1/8-inch-high ribs on 12-inch centers and a full sidelap configuration
- An increased number of fasteners is used along the eaves to combat moisture migration from ice and snow buildup
- StarMark wall panels have four major corrugations 1-inch high at 12-inches on center, with a 2 3/4-inch-by-1-inch deep depression between each major corrugation
- StarMark panels are roll formed at 26-gauge or 24-gauge, 50,000 psi minimum yield steel with a zinc or aluminum-zinc alloy coating

Star Building Systems
Circle 226 on reader service form

Deer and rabbit repellent
- All-natural, biodegradable repellant made from derivatives of tree sap, fatty acids, eggs and garlic
- Scent conditions animals to avoid treated areas prior to biting into and destroying plants
- Won't drive away butterflies, honeybees or birds
- Once dried, its odor is undetectable to humans
- Available in ready-to-use spray bottle or in concentrated formula

Liquid Fence Co.
Circle 227 on reader service form
FOR SALE

TURBO TURF
HYDRO SEEDING SYSTEMS
Prices Start @ $1295.00
For a FREE hydro seeding info pack & video call:
TURBO TECHNOLOGIES, INC.
1500 FIRST AVE., BEAVER FALLS, PA 15010
1-800-822-3437 www.turboturf.com

Frost Protection

FROST PREVENTION TEMPROTECT
For More Information
CALL 800-369-3878
www.envirotechservices.com
Distributor Inquires Accepted

HELP WANTED

HERITAGE LINKS
Recognized Golf Course Contractor seeks Project Manager, Construction Superintendents, and Shapers with golf course experience for domestic and international work on multiple projects. Must have strong administration skills, knowledge of contracts, budgets and schedules, and computer skills. Please send resumes to: hr@heritage-links.com.

Superintendents, Supervisors, Shapers and Finishers needed for Golf Course Construction Company: Travel Required. Fax resume with salary requirements for immediate consideration to 936/760-1926.

SEMA GOLF/SEMA INTERNATIONAL
Is currently interviewing for full-time experienced project managers, site superintendents, golf course construction shapers, equipment operators, irrigation foreman and general laborers.

Applications can be e-mailed to dlong@segalowm.com, fax to 480/951-4081 or call Doug Long at 480/951-4086 for further information.

RESERVE YOUR CLASSIFIED AD SPACE TODAY!

ADVERTISMENT SIZE: 2" high x 3" wide.
Text only: $2.00 per word with a $60.00 minimum.

TO PLACE YOUR AD: By Phone: 216-961-4135 By Mail: Complete form and mail with payment to: Golf Course News, Attn: Jennifer Halas, 4012 Bridge Ave., Cleveland, OH 44113. We accept jpeg, eps and tif files. By Fax: Complete form and fax with credit card information to 216/961-0364 (24 hours). By E-mail: Send ad with credit card information to jhalas@gie.net. All ads must be prepaid. All rates are per insertion. We accept Visa, Master Card, American Express and Discover.
Volunteer efforts help kids, promote golf's rewards

Making a difference

The Sticks for Kids Foundation can leave an impression on a kid for the rest of his or her life, and members of the Golf Course Builders Association of America are behind efforts to do just that.

The GCBA established the Sticks for Kids Foundation in 1996 to provide the tools and opportunities necessary to allow as many junior golfers - age eight to 18 - as possible to enjoy the game. The mission of the foundation is to provide as many children as possible with:

- A set of clubs to use while learning to play the game;
- A set of clubs to use as many times as they want while deciding to purchase their own set;
- A chance to experience a sport that teaches etiquette, discipline, integrity and honor on competitive courses; and
- A chance to earn a scholarship to further their education in the field of their choice.

Steve Shoemaker is the president of the Sticks for Kids Foundation and also executive vice president of Alliance Golf, a company that installs lakes, water features and hardscape on golf courses and an associate member of the GCBA. Shoemaker has been president of the foundation since 2000 and is in his second three-year term. The president of the foundation serves two three-year terms.

"Course construction has been good to all GCBA members, and all the members have an interest in golf, so the builders were looking for ways to give back to the game," Shoemaker says.

"There is a segment of the population that doesn't have resources to play the game, so the builders decided to help those kids who are disadvantaged," he says. "Golf has all the attributes that help create better people. It's something that anybody at any age can develop good characteristics from."

About 20 SFK programs exist throughout the country. There are four requirements to be a part of the program for participating golf courses. They are:

- Each participating golf course must have an active junior program, and the program may establish, enhance or replace a current program;
- Each golf course that receives new clubs or monetary support from the foundation must have the ability to store the clubs for use by junior golfers;
- Each junior golfer who goes through the program.

The program awards two to four scholarships a year - $10,000 college scholarships given to those quality kids who go through the program. They're nominated by a person who oversees the program of which they're participating.

Those that want to contribute to the program can in several ways:

- Donate funds that can be used to purchase junior sets of clubs;
- Donate time and energy to support established facilities;
- Donate equipment, merchandise and services that will enhance the programs; and
- Help find young kids who would like to experience the game.

Shoemaker says the program needs to be re-examined every once in a while to make sure it continues to head in the right direction.

"We'd like to see more programs operating that impact more kids' lives in more geographic areas," he says.