

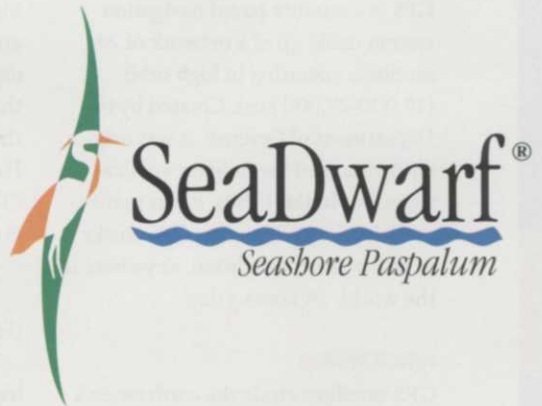
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**Erik Christiansen** is a licensed irrigator and president of EC Design Group, an irrigation consulting and water management firm based in West Des Moines, Iowa. A board member for the American Society of Irrigation Consultants, Christiansen can be contacted at erik@ecdesigngroup.com.

## COMMISSIONING A GPS SURVEY

**G**PS mapping can be as complicated as the purchase of your first cell phone. It's not until you receive the first bill that you fully realize you didn't understand the program.

Not all GPS surveys are comparable. The end product that the course receives needs to be highly accurate, as that's the purpose of creating the map in the first place. GPS mapping options and levels of accuracy can be a bit overwhelming and just as confusing as that cell phone plan. Hopefully I can provide a few points to aid you in choosing a service, but first let's review just how the GPS collection and mapping process works.

### WHAT IS IT?

GPS is a satellite-based navigation system made up of a network of 24 satellites operating in high orbit (18,000-28,000 km). Created by the Department of Defense, it was originally intended for military applications, but in the 1980s, it was made available for civilian use. GPS works in any weather condition, anywhere in the world, 24 hours a day.

### HOW IT WORKS

GPS satellites circle the earth twice a day in a very precise orbit and transmit radio signals to earth. A GPS unit (receiver) obtains this information and uses triangulation to calculate its location. Basically, the GPS compares the time a signal is transmitted by a satellite and the time it was received (around .06 seconds). The difference tells the GPS how far away the satellite is from the unit. By using the same process with a few more satellites, the receiver triangulates its position. The GPS unit is connected to a datalogger

that can store this position information and other data associated to it.

### HOW ACCURATE IS IT?

There are a number of factors that affect the accuracy of a GPS receiver. Orbital errors, satellites positions, atmospheric delays, heavy tree canopies, buildings and timing errors are just a few. These errors are inherent in every GPS unit; what makes the real difference in the final accuracy the unit produces is the quality of the receiver, the method by which the error is differentially corrected and the way in which the equipment is used by the operator. This equipment is not available at your local sporting goods store.

The numerous ways in which various GPS units deal with correcting these errors can be very complex and difficult to understand let alone explain. Adding insult to injury is the way in which the manufacturers themselves characterize accuracy. Have you ever heard the expression, "The devil is in the details?" Well that is especially true with GPS datasheets.

Here is a real example:

"Accuracy (HRMS)# after differential correction" = 30 cm."

The actual footnote for this example has almost 200 words that in extremely technical terms explain that this unit will only achieve the 30 cm level of accuracy 68 percent of the time even under perfect conditions, and that in reality this unit will have a sigma 3 accuracy level of somewhere around 2 to 5 meters, as much as 16 feet.

When it comes to units, you get what you pay for:

- Recreational unit – \$100 to \$500 = 5 to 15 meters;
- Mapping grade unit (handheld) – \$3,000 to \$5,000 = 2 to 5 meters;

- Mapping grade unit (with external antenna) – \$8,000 to \$15,000 = 1 to 3 meters;

- Survey grade GPG unit – \$30,000 to \$50,000-plus = sub-mm to sub-cm.

### WHAT DOES YOUR CLUB NEED?

Most clubs are looking for a high level of accuracy.

Sometimes it's nearly impossible to achieve high accuracy positions with GPS alone due to obstructions such as heavy tree canopy or buildings. In cases like this it's essential to use more conventional survey equipment that is designed to work seamlessly with the GPS. One such piece of equipment is a robotics optical total station. With this type of unit, the obstructed positions can be determined by establishing known positions in open areas with integrated GPS. These positions then can be used to establish a setup point and a bearing. With that information the unit will use a high accuracy laser to calculate the distance and bearing to the operator using a pole with a 360-degree prism mounted at the top. The unit can robotically track the operator continuously transmitting his position via a radio link between the units (even under canopy). As long as the operator has line of sight back to the unit, positions can be collected. These positions are not affected by the obstructed GPS signal and can maintain the high accuracy required.

Certainly it's very challenging to continually explain all the items that go into a quality mapping collection, but don't be fooled by claims that a map can be created to a high level of accuracy with unaccredited equipment. It's just not true. All you'll be left with is an inaccurate map that won't be an asset for the club. **GCI**

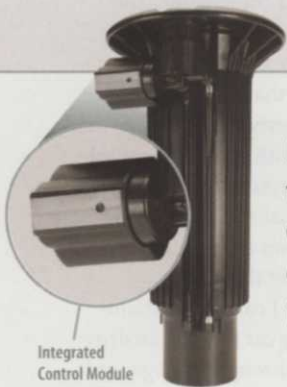
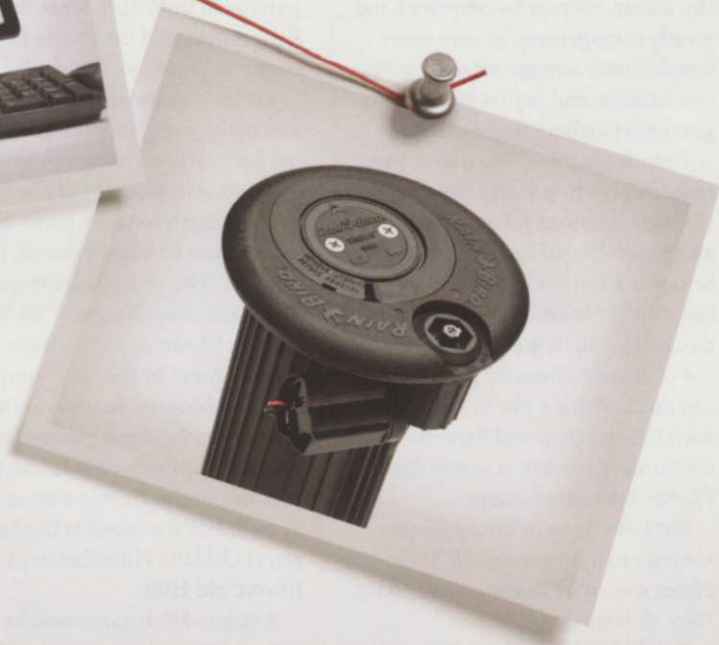


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**Monroe Miller** is a retired golf course superintendent. He spent 36 years as superintendent at Blackhawk Country Club in Madison, Wis. Miller can be reached at [groots@charter.net](mailto:groots@charter.net).

## SOME GOOD NEWS FROM MICHIGAN

There isn't much positive news coming out of Michigan these days. The economic crash hit the auto industry hard, and that means it hit Detroit and Michigan really hard.

Nobody is cheering the misery caused by the bankruptcies of GM and Chrysler, but there isn't a lot of sympathy, either. Years of incompetent and greedy management by auto execs, coupled with outrageous and excessive benefits and pay for the unions, got them to where they are today.

Detroit is a mess. The mayor was recently sent to jail, and the wife of U.S. Congressman John Conyers is also headed to jail for accepting cash bribes as a Detroit City Council member. Average homes are valued at a few thousand dollars, and crime is almost out of control. The only good things I can think of that I like in Detroit are John K. King Used and Rare Books and the farmers' market. It seems doubtful I'll ever visit either again.

But I am going to Michigan this summer to immerse myself in the places you aren't reading about today. They all involve golf.

Golf has a rich heritage in Michigan. My wife, Cheryl, is from Frankfort, a quaint town on the Lake Michigan shore. Nearly everyone involved in golf knows about Frankfort; it's the home of Crystal Downs, the Alister MacKenzie gem that is on everyone's list of best classic golf courses in America. CDCC is also well known for its excellent golf course superintendent, Mike Morris. Mike is one of the best and is also a native of Frankfort.

Frankfort has a prominent place in Michigan golf history for other reasons. People my age are well aware of how important Tuck Tate was to golf turf. He has been gone a number of years now, but I still think of him frequently. Tuck owned the Frankfort

Golf Club; he was a leader in the Northern Michigan Turf Managers Association and a strong supporter of turfgrass research at Michigan State University. Bill Bengeyfield, retired national director of the USGA Green Section, succeeded Tuck as owner of the Frankfort Golf Club, which he purchased from Tuck when he retired. Bengeyfield sold the course to a developer two years ago.

My in-laws live in Traverse City, and in the twilight of his career, one of my favorite golf characters spent most of his time in that part of Michigan. Walter Hagen owned a home on Long Lake before he bought one on Lake Cadillac. Two of my favorite golf books are about Hagen – "Sir Walter" By Tom Clavin and "The Walter Hagen Story" by the Haig himself. Hagen, of course, was one of the greatest professional golfers ever and captivated crowds on golf courses all over the world. He was a showman, as well, and was hired as the first club pro at Oakland Hills Country Club in Bloomfield Hills.

A trip to Michigan would be incomplete without a visit to The Gerald R. Ford Presidential Library and Museum in Grand Rapids. There you're reminded of President Ford's love of golf and his erratic driving of the ball into crowds gathered to watch him play.

It's a short run from Grand Rapids to East Lansing, home of Michigan State University. MSU has given us some of the best turfgrass researchers and instructors in the country. Think about Dr. Jim Beard, who started his career at MSU and spent many highly productive years there. Professor Joe Vargas will be long remembered for his contributions to pathology; his legacy will include outstanding grad students who filled turfgrass faculty positions elsewhere. Peter Cooking-

ham has done a masterful job managing the Turfgrass Information Center at the MSU libraries. And then there's Dr. Paul Reike, one of the brightest, most humble and dedicated men I have ever met.

Michigan has given so much to golf turf. Just think – during my career, five GCSAA presidents came out of Michigan – Ted Woehrl, James Timmerman, Gerald Faubel, William Roberts and Jon Maddern. The roster of GCSAA's John Morley Award winners includes many Michiganders and the state is well represented on the USGA's Green Section Award recipient list. The MTF and Gordon LaFontaine set a great example for the rest of us for years, and environmental stewardship had an early and strong foothold in Michigan.

Are you looking for a golf course architect? In Michigan you'll find men like Tom Doak, Ray Hearn, Jerry Mathews, Paul Albanese and others. Michigan has hosted some of golf's most important championships and tournaments, has more outstanding golf courses than I could name, and she has golf course superintendents the whole country knows about.

From a history that includes William Beal and Liberty Hyde Bailey, MSU continues with its important role today, despite an extremely depressed state economy. That said, I still hope Wisconsin rolls over them in football and basketball later this year!

From my home I can get to Michigan by plane or by car ferry. I can drive around the horn through Chicago, or I can cross the big Mac on the northern route. However I go, the last thing I'm thinking about is the bad news from the auto industry and Detroit. I'm thinking about golf and how much this state has given to all of us involved in the great game. That should make the entire state proud. **GC**



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## CONSUMER RESEARCH

A glimpse of how golfers' behavior affects the business of golf facility maintenance and management.



### Tracking driver and ball buyers

Customer profiles can be an important tool to help drive revenue at any facility. The National Golf Foundation released its "Golf Consumer Buying Profiles" report in June 2009 based on a survey of 2,400 adult core golfers conducted in November 2008. Core golfers play eight or more rounds per year. A few highlights include:

● **DRIVER BUYERS** (those who bought a new driver in the past year for at least \$100):

- Who are male bought 84 percent of all drivers sold.
- In the 18-29 age range are 30 percent more likely to have bought a driver in the past year than total core golfers.
- With household incomes of \$100,000-plus are responsible for purchasing 50 percent of all drivers sold, despite making up 38 percent of core golfers.
- Who score 80-89 make up 27 percent of core golfers, but purchase 45 percent of drivers sold.

● **PREMIUM GOLF BALL BUYERS** (those who bought at least two dozen new golf balls in the past year for \$24 or more per dozen):

- Who are female are 25 percent less likely to have bought premium balls than core golfers.
- With household income of \$100,000-plus are responsible for purchasing 56 percent of all premium golf balls.
- Who score less than 80: 51 percent of them bought premium balls, compared to 32 percent of those who score 80-89, 23 percent of those who score 90-99 and 8 percent of those who score 100-plus.
- Who subscribe to golf magazines spend 69 percent of all dollars spent on premium golf balls. Those who watch golf on TV at least weekly spent 81 percent of all dollars spent on premium golf balls.

● **NON-PREMIUM GOLF BALL BUYERS** (those who bought at least two dozen new golf balls in the past year for less than \$24 per dozen):

- Who are female are 31 percent more likely to have bought non-premium balls than core golfers.
- Who are 40-49, despite making up only 20 percent of core golfers, are responsible for buying a quarter of non-premium golf balls.
- Who score 100-plus: 32 percent of them have bought non-premium balls in the last year, compared to only 8 percent of those scoring less than 80.

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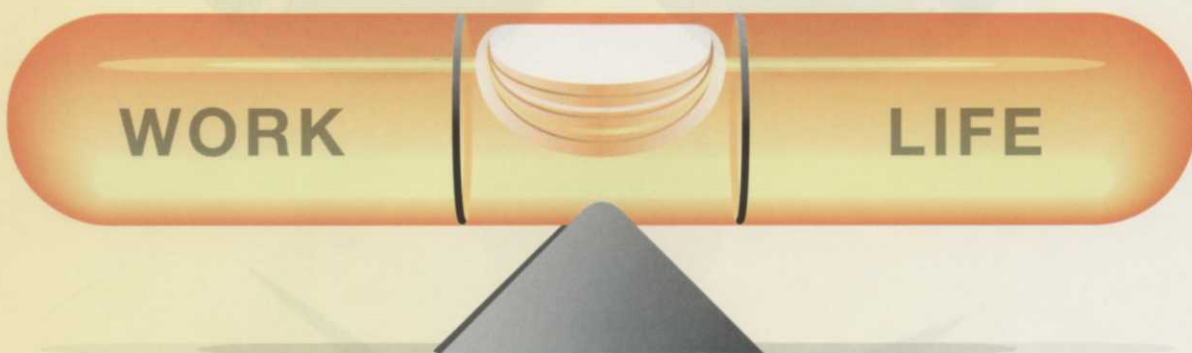


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# finding **balance**

When it comes to work/life balance, superintendents are often their own worst enemies.

BY MIKE ZAWACKI



**T**en months ago Jeff Sweet's world changed.

A self-described workaholic, Sweet, CGCS, says his newborn daughter's arrival made him more conscious about striking a balance between the 70-plus hours a week at Bucks Run Golf Club in Mt. Pleasant, Mich., and his new parental responsibilities.

"You want to make sure you don't miss all of the intangibles that life brings you now," he says. "You find yourself asking, 'It's 4:30 p.m. and why am I not at home?'"

"You don't want to look back 15 years from now with regret," Sweet adds. "You won't ever be saying to yourself, 'Gosh, I wish I would have worked harder.'"

Sweet's predicament – establishing an acceptable balance between work and life – is a scenario familiar to superintendents, their assistants and their crews. No one enters the profession naive to the fact that it's a physically, mentally and emotionally demanding vocation.

And for some, this devotion mirrors addiction.

"I just always felt the need to be at work and I wasn't happy unless I was at work," Sweet says. "I don't know if I was wired wrong, but I wasn't happy unless I was at work and making sure that everything was getting done properly."

This shared perspective is part of the problem, says Bill Bieck, CGCS, Heritage Hills Golf Course, McCook, Neb. Superintendents have always sought the unattainable – course perfection.

"Many superintendents, especially us old-timers, are very dedicated to the profession and to the job," says Bieck, who's spent 34 years as a superintendent. "We strive for perfection and we know when things aren't perfect. Unfortunately, we also know we can never reach perfection, but that doesn't stop us from striving toward that goal."

Throughout their careers, the scales in many superintendents' lives skew toward work and the golf course. As a result, they make sacrifices. According to a Golf Course Industry survey, the majority of superintendents cancel appointments with family, friends or spouses due to work-related commitments. Few have the time or energy for leisure activities or hobbies. Likewise, their duties make it difficult to relax, leading to irritability and detachment while away from the facility. (See GCI's Work/Life Balance Survey on page 23.)

"In this industry, it's easy to become immersed in a whole myriad of challenges and issues within the job," says Bob Hickam, director of golf, Tahoe Mountain Club, Truckee, Calif. "In a lot of cases, it's a 12-hour day, 365-day a year operation that we manage. There are no breaks and there are no holidays because those days are our busiest times."

Current economic conditions have only exacerbated the work/life challenge in most U.S. business sectors. According to a recent FedEx Office survey, 86 percent of full-time workers planned to pursue a better work/life balance this year. Likewise, 96 percent place greater importance on their work/life balance this year than they did in 2008.

But even before the recent economic downturn, professionals were focused on greater work/life balance. According to a 2007 Monster Worldwide study, 89 percent of employees believed work/life balance programs – such as flex and vacation time – were important when evaluating new jobs, yet only about half of human resources professionals considered work/life balance to be an important initiative for their companies.

Work/life balance always has been an issue in the American workplace, says Terrence Sember, a management consultant in Clarence, N.Y., and the author of

"The Essential Supervisor's Handbook."

"Managers and employees both feel the pressure to survive or succeed at work and that's what drives people out of balance," Sember says. "It's easier to say 'no' or 'not now' to family and friends because the repercussions are potentially less immediate and visible. At work, clients, bosses and coworkers may be less tolerant of choosing life versus work, and to avoid potential ramifications they can't or don't say no. Likewise, many people define themselves by their work. So a perceived failure there can shake someone to their core."

#### **OWN WORST ENEMY**

The paradox, though, is most superintendents recognize the value in work/life harmony, and many have taken steps to facilitate balance, not only in their personal lives, but in the lives of their crews, as well.

Outside of the golf course industry, the average overextended U.S. worker is more apt to point the finger at job expectations and corporate culture for their work/life imbalance. This is not necessarily so in the golf course industry. Very few superintendents blame their club presidents or boards for an unbalanced life. In fact, more than half (see the chart on page 24) say their superiors are accommodating and sensitive to their family-related needs and responsibilities. Likewise, majority (54 percent) say they're encouraged to strike a work/life balance, and more than half don't believe they're expected to put their jobs before their families.

So why is there personal conflict?

Jeff Holiday, CGCS, has received nothing less than the full support of his superiors at Salisbury Country Club in Midlothian, Va., to maintain a work/life balance. Holiday's sense of dedication – a trait he describes as being "hardwired" into him early on as an assistant – is the



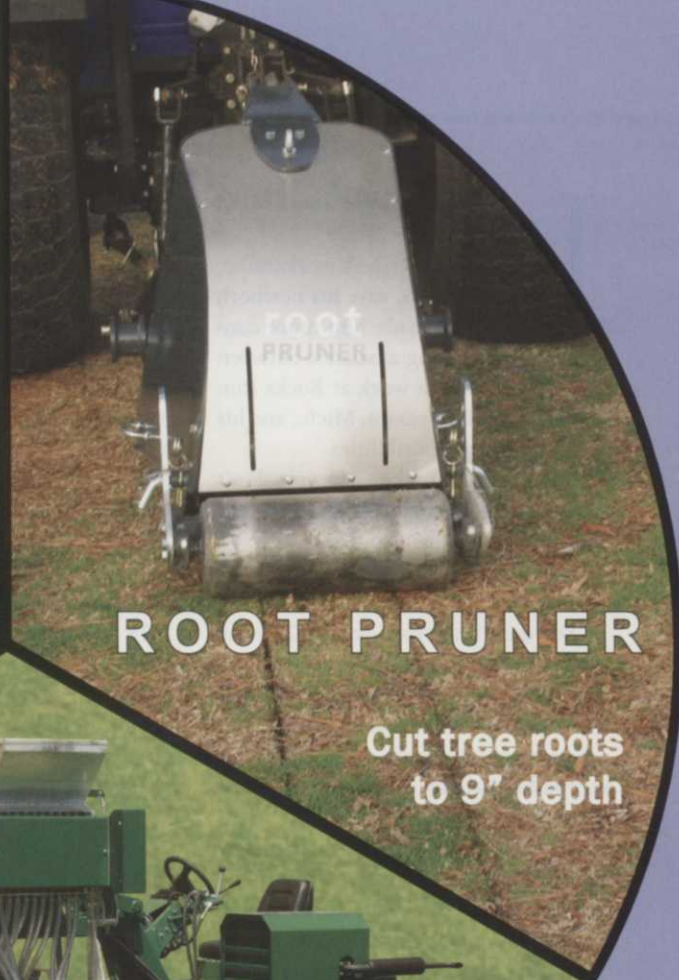
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