

# Tracker™

## PORTABLE IRRIGATION MACHINE

The Tracker™ offers an economical solution for supplementing seasonal watering needs of ¼ acre to 2 acre areas. It's also ideal for irrigating athletic fields, cemeteries, golf course roughs, or other large areas where an underground system is impractical. Built to last with precision German engineering and high quality materials, this portable powerhouse can irrigate an entire football field in just two passes.

### specifications

- Weight: 58 lbs.
- Size: Length 33", Width 22", Height 22"
- Materials: Aluminum, Brass, ABS
- Minimum Water Pressure: 50 psi
- Hose Required: 1"
- Includes 1" brass quick-connect adapter



### ordering

Part # T-400 Tracker™ Portable Irrigation Machine

**NEW!**

## Nozzle Locker™ Kits

**STOP LOSING  
YOUR NOZZLES!**

### THE VERY BEST NOZZLES - KEEP THEM SECURE (and handy)

- Entire Precision™ nozzle series (Rainbow™, Rainmaker™, Cloudburst™ and Cyclone™)
- Solid Brass High-Flow Valve
- CoolPro™ with Precision™ fogging nozzle
- Your choice of MAGNUM™ multi-pattern nozzle (original, UltraMAX Turbo Shift, or UltraMAX Full Throttle)
- Unbreakable, lockable, corrosion-proof case to keep these tools safe and secure



### ordering

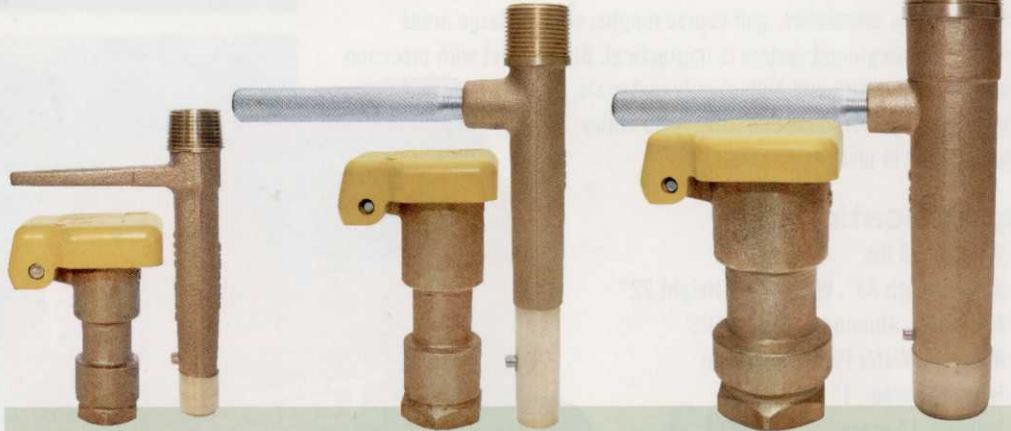
- Part # HP-K1 NozzleLocker™ with ¾" Magnum (yellow) nozzle
- Part # HP-K2 NozzleLocker™ with ¾" Magnum UltraMAX Full Throttle nozzle (high flow)
- Part # HP-K3 NozzleLocker™ with ¾" Magnum UltraMAX Turbo Shift nozzle (high flow)
- Part # HP-K4 NozzleLocker™ with 1" Magnum UltraMAX Full Throttle nozzle (high flow)
- Part # HP-K5 NozzleLocker™ with 1" Magnum UltraMAX Turbo Shift nozzle (high flow)



# Quick Coupler Valves & Keys

## SOLID BRASS, SINGLE SLOT/LUG ESSENTIALS

Built to last, Underhill valves and keys are constructed of solid red brass and stainless steel. Valves incorporate rugged one-piece design.



Valve: Part # QV-075R  
( $\frac{3}{4}$ " FPT inlet)

Key: Part # QK-075  
( $\frac{3}{4}$ " MPT x  $\frac{1}{2}$ " FPT outlet)

Valve: Part # QV-100R  
(1" FPT inlet)

Key: Part # QK-100  
(1" MPT x  $\frac{3}{4}$ " FPT outlet)

Valve: Part # QV-150R  
( $1\frac{1}{2}$ " FPT inlet)

Key: Part # QK-150  
( $1\frac{1}{2}$ " MPT x  $1\frac{1}{4}$ " FPT outlet)



The Claw™ pictured with 1" quick coupler, key and hose swivel.

## hose swivels

- Part # HS-075  $\frac{3}{4}$ " FPT x  $\frac{3}{4}$ " MHT outlet
- Part # HS-100 1" FPT x  $\frac{3}{4}$ " MHT outlet
- Part # HS-101 1" FPT x 1" MHT outlet
- Part # HS-151  $1\frac{1}{2}$ " FPT x 1" MHT outlet



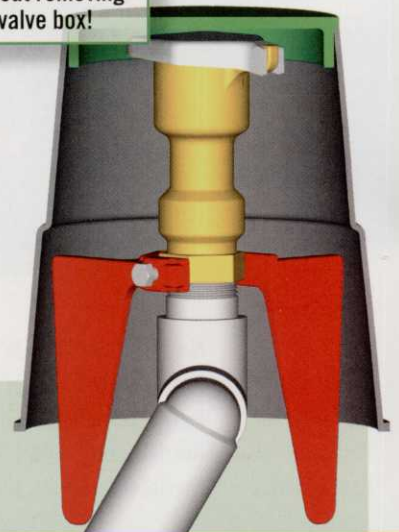
## The Claw™

### QUICK COUPLER MOTION RESTRAINT

When quick coupler valves become unscrewed from swing joints, it's more than just a hassle - it can be dangerous. The Claw™, new from Underhill, offers a simple solution. Embedded in the soil below the quick coupler, and then securely attached to its base, The Claw provides significant resistance to rotational, vertical and horizontal motion, preventing the valve from moving. Made from high strength ductile iron, this compact anchor attaches easily with a single steel bolt.

### EASY RETROFIT!

Installs without removing valve or valve box!



### ordering

- Part # QCA-075100 The Claw™ for  $\frac{3}{4}$ " and 1" valves
- Part # QCA-150 The Claw™ for  $1\frac{1}{2}$ " valves

# Impact Sprinklers

## SOLID BRASS, ULTRA-RELIABLE WORKHORSES

For reliable, trouble-free, high-performance year after year, you just can't beat our brass impact sprinklers. Available in full circle and full/part circle, in inlet sizes of 3/4", 1" and 1 1/4".

### features

- Solid brass construction
- Stainless steel drive spring
- Bearing assembly hood for longer wear life
- Chemical resistant bearing seals
- Solid brass nozzle



Underhill brass impacts atop the RollerPro™ portable base (see page 10) puts a powerful sprinkler anywhere you can run a hose.



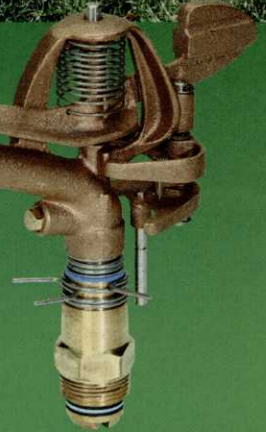
3/4"

Flow: 5-15 GPM  
Spacing: 40-60 ft.



1"

Flow: 15-45 GPM  
Spacing: 50-80 ft.



1 1/4"

Flow: 25-120 GPM  
Spacing: 75-110 ft.

Performance data shown at 80 psi. GPM and radius will vary with pressure at sprinkler

### ordering

		GPM	Radius (ft.)
Part # SI075F	3/4" MPT Full Circle	13	57
Part # SI075P	3/4" MPT Part/Full Circle	11	48
Part # SI100F	1" MPT Full Circle	23	71
Part # SI100P	1" MPT Part/Full Circle	23	71
Part # SI125F	1 1/4" MPT Full Circle	51	96
Part # SI125P	1 1/4" MPT Part/Full Circle	54	78

# HoseTap™

## SOLID METAL HOSE ADAPTER

HoseTap™ gives you a hose connection anywhere you have a Toro® or Rain Bird® electric, valve-in-head sprinkler... a fast connection when quick-couplers or hose bibs are not available. Includes aircraft aluminum body (won't break or wear out like plastic) anodized with sprinkler manufacturer color, o-ring, riser, 1" brass swivel and 3/4" adapter. Also available without brass swivel/adapter.



Includes HoseTap, 1" MHT brass swivel and 3/4" adapter

### ordering

- Part # HN-T100S HoseTap™ for Toro® 1" inlet golf sprinklers
  - Part # HN-T150S HoseTap™ for Toro® 1 1/2" inlet golf sprinklers
  - Part # HN-R125S HoseTap™ for Rain Bird® Eagle 700 Series sprinklers
  - Part # HN-R150S HoseTap™ for Rain Bird® Eagle 900 Series sprinklers
- Includes 1" brass swivel and 3/4" adapter. Add "B" for BSP thread.  
To order without brass swivel: Remove "S" from part number.

### REPLACEMENT O-RINGS

- Part # OR-100 Fits Toro® 1" inlet and Rain Bird® Eagle 700 Series golf sprinklers / HoseTap
- Part # OR-150 Fits Toro® 1 1/2" inlet golf sprinklers / HoseTap
- Part # OR-150R Fits Rain Bird® 1 1/2" inlet golf sprinklers / HoseTap



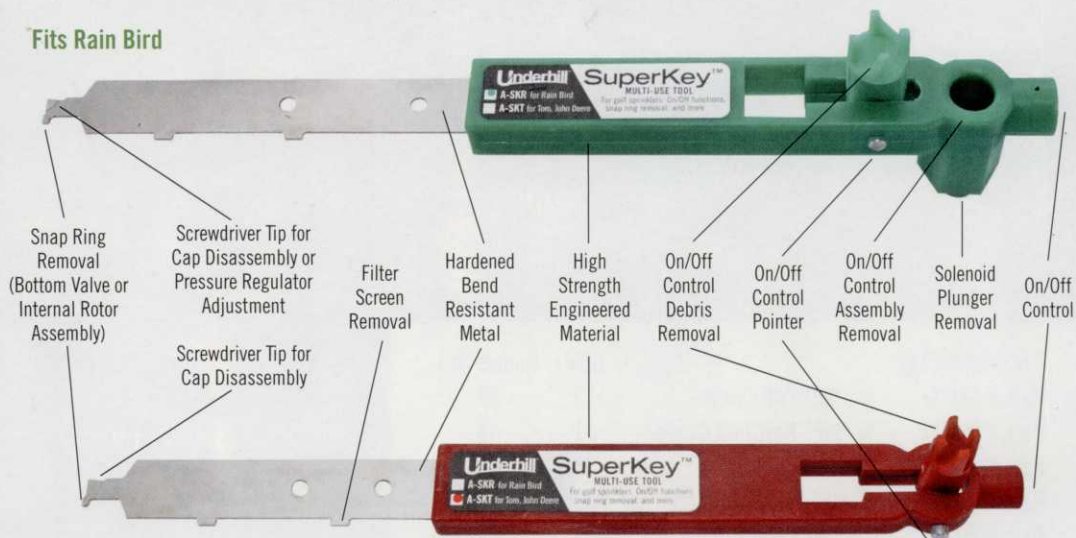


# SuperKey™

## MULTI-PURPOSE GOLF SPRINKLER TOOL

This ultimate multi-purpose tool designed for Rain Bird®, Toro® and John Deere® golf sprinklers is a must have. Made of stainless steel and composite material, it effortlessly turns Electric-Valve-In-Heads on and off, removes internal assembly snap rings and performs many other sprinkler maintenance chores.

### Fits Rain Bird



- Snap Ring Removal (Bottom Valve or Internal Rotor Assembly)
- Screwdriver Tip for Cap Disassembly or Pressure Regulator Adjustment
- Filter Screen Removal
- Hardened Bend Resistant Metal
- High Strength Engineered Material
- On/Off Control Debris Removal
- On/Off Control Pointer
- On/Off Control Assembly Removal
- Solenoid Plunger Removal
- On/Off Control

### Fits Toro, John Deere

## ordering

- Part # A-SKR SuperKey™ for Rain Bird® golf sprinklers
- Part # A-SKT SuperKey™ for Toro® and John Deere® golf sprinklers



# VersaLid™

## VALVE BOX UNIVERSAL REPLACEMENT LID

VersaLid™ is the easy solution for broken or missing valve box lids. No need to guess what brand a buried box is or even worse - dig it up to find out - VersaLid's locking system fits all 6"-7" round valve boxes.

### features

- Fits all 6"-7" round boxes
- Universal fit
- Greater top-load strength and more UV-resistant than structural foam lids
- Purple Lid available for non-potable/reclaimed water

**STRONGER! BETTER FIT!**  
than original equipment lids



# Splice Kit

## 3M DIRECT BURY SPLICE KIT

Each kit includes one wire connector which can accommodate wire sizes from 18-10 gauge and a waterproof gel case. Excellent for golf, commercial and residential applications.

## ordering

- Part # VL-6 Green VersaLid™ 6"-7" valve box lid
- Part # VL-6P Purple VersaLid™ 6"-7" valve box lid
- Part # DBRY-4 Direct Bury Splice Kit - 4 Pack

# Gulp™ UltraMAX

## SUPER HIGH-CAPACITY WATER REMOVAL SUCTION PUMPS

Whether you need to remove water from sprinklers and valve boxes or other areas or devices, UltraMax Series Pumps are the ideal tools for the job... huge capacities and the smoothest pumps you will ever use as well.

### special features

- Super Smooth Pumping Action
- Extra Volume Capacity
- Strong Aluminum Pump Shaft
- Heavy-Duty Clear Tube Material
- Self Priming

### also great for



### GULP SYRINGE ULTRA

- 12 oz./stroke
- 12" pump chamber

### BIG GULP ULTRAMAX

- 12+ gallons per minute!
- 36" clear pump chamber
- 72" or 36" outlet hose

### GULP ULTRAMAX

- 8 gallons per minute!
- 14" clear pump chamber
- 18" outlet hose



Aluminum shaft

Easy, push-button cleaning system

Gulp UltraMAX and BigGulp UltraMAX include debris filter attachment for very dirty water.



### ordering

- |                  |                                      |
|------------------|--------------------------------------|
| Part # A-G12-C   | Gulp™ UltraMax                       |
| Part # A-G3636CK | BigGulp™ UltraMax w/ 36" outlet hose |
| Part # A-G3672CK | BigGulp™ UltraMax w/ 72" outlet hose |
| Part # A-G12S-C  | Gulp™ Syringe Ultra                  |
| Part # A-GTUB-C  | 100 ft. outlet hose                  |



20505 Crescent Bay Drive • Lake Forest, CA 92630 USA

tel: (949) 305-7050 • fax: (949) 305-7051  
1-866-863-3744 • www.underhill.us



An industry leader in innovative watering products all over the world, Underhill brings 33 years of know-how in developing our inventory of "Products that work...smart.™"



## UNDERHILL INTERNATIONAL PROFESSIONAL WATERING PRODUCTS 2012

© 2012 Underhill International Corporation. All original equipment manufacturers, names and products presented in this publication are used for identification purposes only, and we are in no way implying that any of our products are original equipment parts. Toro® is a registered trademark of the Toro Company, Rain Bird® is a registered trademark of the Rain Bird Sprinkler Manufacturing Corporation, John Deere® is a registered trademark of Deere & Company.



Form No. UIWP-B12

Products that work...smart.™

“We have experienced two of the worst droughts over the past two years in this region and are now entering a third. The use of wetting agents has allowed me to prevent turf damage and continue to provide quality conditions for both our members and reciprocal players during these trying conditions.”

—David Dore-Smith, Copperleaf Golf Course

to extend his interval between irrigation cycles dramatically. Given normal rainfall he may irrigate fairways three times a month now as opposed to three times a week in the past. He also sees a more uniform turf performance and fewer localized dry spots. And, he has found that fertilizer and fungicide inputs decreased because turf wasn't suffering from inconsistent moisture stresses.

When David Phipps, superintendent at Stone Creek Golf Club in Oregon City, Ore., started using wetting agents on the fairways there was a dramatic difference from the previous year. The first and foremost difference was the uniformity in which the turf appeared during the stressful times of the summer. “There were far fewer dry areas,” he says. “It also seemed we were far more effective with water.”

Scott Pavalko, superintendent at Cog Hill Golf and Country Club in Lemont Ill., has used wetting agents, most recently spraying Dispatch, an Aquatrols product, 16 ounces per acre every two weeks with his normal preventative fungicide rotation.

“What I like best is that it is safe to tank mix, spray in the morning and water in at night. We had chronic LDS problems on fairways,” he says. “We are also a public facility with very early tee times, which makes it very difficult to spray and water in a wetting agent immediately. Using wetting agents has made

our overnight watering more effective.”

Some wetting agents can be applied all year, depending on where a course is located and the local climate. The main use period is throughout the growing season, whatever that might be in a locale. Some products are used on an as-needed basis. The volume used depends on the product.

Karnok says wetting agents can be applied anytime throughout the year.

“It depends on the objective. If the objective is to affect drainage or water movement in the root zone, wetting agents can be applied anytime,” he says. “For the control of localized dry spots caused by water-repellent soil, they are often applied in early spring and through the summer and into the fall. However, depending on the severity of water-repellency, region of the country, type of rootzone, turfgrass species and weather conditions, there may be advantages to using wetting agents throughout the year. The rate in which a wetting agent is applied, depends on the specific product. Recommended rates range from four ounces to 16 ounces per 1,000 square feet. Superintendents should always follow label directions.”

Despite the apparent panacea soil sufficants offer in these days of extremely variable weather conditions and enhanced expectations for pristine playing conditions at all times, the use of

## Getting it in the ground

Using a golf course fertigation system in conjunction with the use of soil sufficants is becoming commonplace.

Andy Moore, agricultural marketing manager for Aquatrols, says injection has a number of benefits; it is a very low labor-cost way of treating the entire golf course; it is a great way to save on water and energy; it helps to smooth out problems with irrigation coverage; and it improves playability across the entire golf course.

Chuck Champion, president of KALO, says, “The most cost-effective way to apply wetting agents is through irrigation injection. This is a labor-free method for spoon-feeding small volumes of wetting agent over the entire golf course over an extended time for preventative treatment. This method allows wetting agent costs to be spread over the entire golf course acreage.”

Most injection systems will allow for rate adjustment for golf greens separate from other turf areas. It's best to have a proportional injection system that is programmed with the metering pump to keep the wetting agent injection in a consistent parts-per-million application rates. When the water pumping system is shut down, the wetting agent metering pump shuts down as well. These systems need to be monitored regularly to avoid spills or to ensure that application rates are calibrated properly.

“This summer will be the first summer that we will use wetting agents through fertigation,” says Tim Schaefer, superintendent at Emerald Falls Golf Club in Broken Arrow, Okla. “Our goal is to be able to fine-tune our fairway wetting agent program so that we are only applying it where we actually need it. If we are able to achieve this, the cost saving could be very significant.”

Dave Libby, superintendent at Prouts Neck Country Club in Scarborough, Maine, began wetting agent use with injection products.

“They worked great,” says Libby. “We have since moved away from that because we find that we want more control of when and where the agents are applied. I think injection is a great way to apply wetting agents for those courses with limited resources, or limited spray windows. Healthier turf and fewer input makes everyone happier.”

Dr. Keith Karnok, a professor specializing in turf management at the University of Georgia's College of Agricultural and Environmental Sciences, says superintendents need to keep in mind that an irrigation system needs to be in good working to achieve uniform delivery, and that not all areas of the golf course may benefit from the application of a wetting agent.



No Water. No Sewer. No Problem.



### Clivus Multrum M54 Trailhead Composting toilet system & building

#### M54 Trailhead

**clivusmultrum**  
Incorporated

- Odor free
- Pollution Free
- ADA compliant
- Kit or pre-fabricated
- Single or double stall
- Custom finishes
- 6 oz Foam-flush toilet or completely waterless fixtures

Contact us to learn more **800.425.4887**

[www.clivusmultrum.com](http://www.clivusmultrum.com)



## *SUPERthrive* The Original Vitamin-Hormone solution

Many golf courses apply *SUPERthrive*® on Mondays to revive weekend-stressed turf



*SUPERthrive*  
WORLD'S FAIR  
1940 Gold Medal  
The Original Vitamin-Hormone solution

*SUPERthrive*® ~ 12610 Saticoy St. South, North Hollywood, CA 91605 ~ 800.441.8482

Visit [www.SUPERthrive.com](http://www.SUPERthrive.com) for our free trial offer

soil sufficants is not without some potential drawbacks, or at least concerns.

"The biggest drawback is cost," says Schaefer. "I would love to apply wetting agents in our fairways from June until September but can't afford to. We have to pick and choose when and where we want to apply them."

Libby says long-term products can have some drawbacks in rainy years.

"The 90-day products aren't really all that special from a chemistry standpoint. Their longevity is derived from the high rate at which they are applied and their resistance to downward mobility in the soil profile. This means that if you apply 16 ounces of a product in the spring and end up having a really wet year, the turf can become soft and soggy."

Moore advises that superintendents ask for proof about what is being claimed by each wetting agent product before using.

"Many states do not regulate the sale of soil wetting agents, a lot of stuff is put into containers and claims are placed on the label. This leads to confusion for the turf manager. Don't take anyone's information on face value. Ask questions and make sure you know what you are using."

Karnok says identifying the "best" wetting agent is virtually impossible, since every wetting agent cannot be tested under all the varying conditions one would find in the field. Also, new products are being released constantly. The degree of potential phytotoxicity is a major concern. Some wetting agents should be watered into the soil and off turfgrass leaves as soon as possible after application, whereas irrigation can be delayed with some products.

Brace says more and more superintendents will be using surfactants as the demand for water increases and water quality decreases.

However, new chemistry for wetting agents is slow to develop as raw material suppliers are conservative about investing in development costs for new basic chemicals, says Champion.

"The size of the market is limited and there are too many products chasing too few customers these days, so product technology has remained much the same in recent years."

It is clear that wetting agents will likely become an ever more important tool in a superintendent's arsenal to insure superior playing conditions in the coming years. GCI

John Torsiello is a Torrington, Conn.-based freelance writer and frequent GCI contributor.



We look at soil & water quality  
from a different perspective.

**Yours.**

**AQUAPLEX Ca** 

**AQUAPLEX amino** 

**BLAST**   
INJECTABLE

**BLAST**   
SPRAYABLE

**CALTRISAL ST** 

**Your course is like no other –  
especially when it comes to soil  
and water quality issues.**

That's why we've designed a  
comprehensive line of products to  
help you manage your unique soil-  
and water-related challenges. From  
salt stress to carbonate buildup,  
we'll help you evaluate your turf's  
needs and build a program that is  
both effective and affordable.

Contact your Aquatrols distributor  
for more information.

[www.aquatrols.com](http://www.aquatrols.com)





**Jeffrey D. Brauer** is a licensed golf course architect and president of GolfScapes, a golf course design firm in Arlington, Texas. Brauer, a past president of the American Society of Golf Course Architects, can be reached at [jeff@jeffreydrauer.com](mailto:jeff@jeffreydrauer.com).

## DESIGN FOR MAINTENANCE

Last month, I noted that designers in the early post-WWII era designed more with maintenance in mind, compared with designers of the 1990s and 2000s who favored visual splendor over practicality. Historically, practicality and cost dominates design, so it's worth remembering the design details that make a maintenance-friendly course. Luckily, I often ask superintendents which features cost them the most time and trouble – and keep notes on the answers!

On a “bell curve,” the top 10 percent of courses should greatly favor design over maintenance, the bottom 10 percent of courses should greatly favor ease of maintenance over design and the middle 80 percent should be a practical blend between maintenance savings and design.

Superintendents and courses vary, so no single item is mandatory design criteria. Many others have high maintenance value no design impact, and should be included. Disclaimers aside, here is my ongoing list of design maintenance-friendly design features for your consideration:

### GREENS

- At least six real pin positions, 14 or more preferred for busy courses
- Gentle edge shapes (min. 25-foot radius) and vertical transitions to reduce mower damage on cleanup pass maximum
- Maximum 17.5 percent slopes to surrounding mounds, between distinct green levels and on high points facing damaging winds
- Turf choice – No monocultures – select for hardiness, water conservation over color or putting

### GREENS SURROUNDS

#### Green Access

- Equipment – Transition slopes to mounds, ability to mow in all direc-

tions easily; 6 inches between green and bunker for turning

- Golfers' access routes (from cart path) – Min. 30 feet wide, maximum 5 percent slope, 2 percent no cross slope; back half of green for circulation, speed of play; away from major drainage flows

## Superintendents and courses vary, so no single element is mandatory design criteria.

### GREEN APPROACH

- Sand cap and herringbone tile
- Adjust sprinklers so part circles don't all stop at same place, causing overwatering

### BUNKERS

- Bunker-rake friendly (with no liners, or durable liners) – Multiple sand rake access points; match sand rake turning radius, normally 7-8 feet; flat enough to reduce sand wash from rain (varies by region, but max. 25 percent); no uphill drainage goes into bunkers; extensive herringbone tile.
- Banks and Noses – Match mowers' turning radius and maximum slope (varies, but about 9-foot radius, 33 percent slope); if narrower, make “nose width” one mower-width wide for down and back mowing.

### TEES

- Rounded tee edges easier to mow – 8-foot minimum radius
- Gentle tee banks – 4:1 or greater, but 3:1 okay, with transition slope
- Combine tee surfaces – large tee surfaces quicker to mow than several small ones.

### CART PATHS

- Broad curves to distribute exit traffic; allow truck to drive 15 mph (both at least 100-foot radius); wide access points to fairway (at least 30 feet)
- Minimum radius of intersections 55 feet (allows max. cart speed to stay on path)
- Curbing at tees and greens – 4-foot-roll curbs to allow maintenance equipment to pass; short (20 feet or less) curb areas concentrate foot traffic
- Drains/grading to keep surface and edges dry to reduce tire damage
- USE REBAR, DAMMIT!

### FAIRWAYS

- Reduce fairway acreage – fairways cost more than rough, 30 acres is better than 45; narrow and starting as far from tee as possible
- Cut off drainage that flows cross fairway
- Provide good irrigation coverage, especially on cart path side; wide access routes (at least 30 feet wide)

### ROUGHS

- Minimize in favor of natives
- Don't minimize where it affects speed of play
- Provide irrigation, even if not for regular use
- Reduce mounds to increase mowing productivity

### TREES

- Clear wide enough from critical areas – at least height of tree
- No trees on east sides of tees, greens, heavy circulation areas
- No shallow root or brittle bark trees, select for water conservation

Attention to construction details in implementing these schemes assists in making maintenance easier, but the list would be just as long. **GCI**