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Blazon™



SPRAY PATTERN INDICATOR

Penalties

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challenging to the avid golfer. The scratch or professional golfer seems to find only 7,000-yard plus courses challenging to his skills.

The top golf architects are able to satisfy golfers of all abilities in one course. This is done by designing numerous tees for each hole; situating hazards to challenge all golfers; and making penalties in proportion to the risks taken.

Some of the newer courses have very few, if any trees. Trees can provide beauty and depth perception to the golfer. They can also serve as hazards or provide protection for golfers on adjacent fairways and tees. Good architects use a variety of trees to provide a palette of colors pleasing to the golfer's eye.

Links style courses are generally devoid of trees. Since golf courses should fit into the natural surroundings, a links course would not be appropriate for a wooded area.

Water, because of its soothing effect on golfers, is being used more and more by golf course architects. Streams, large and small ponds and waterfalls all add to the enjoyment of golf. Long after one has taken a penalty in the water, he will remember the peaceful experience of the water and return again to challenge it.

Water features are among the finer elements of a course, except when they appear to be forced into the design, seem unnatural, or their location makes a hole too difficult for the expected user.

Sand bunkers are not unlike water features. Care in assuring proper placement and the proper type and depth of bunkers is important. Again, the expected talents of the golfer must be considered in placement and design.

Bunkers should never penalize an excellent shot. Sand areas can intimidate a high handicapper even to a higher degree than a water hazard. The placement of sand bunkers can be used effectively to direct the intended shot, provide depth perception and challenge for a great shot to a green, penalize an errant shot, and contribute to the beauty of the course.

Municipal, country club, resort and championship courses all require different strategies and placement of bunkers and different degrees of difficulty of the bunker. Generally speaking, municipal courses will have fewer bunkers to help speed up play. Country clubs have quite a few bunkers with a lesser degree of difficulty than championship courses, but their location does not overly penalize the golfer.

Resort courses are being developed with championship quality, with heavy use of sand and water hazards. These hazards are placed to provide championship quality from the back tees, yet average challenge from the regular tees. Championship courses are well-bunkered to challenge the best players.

Grass bunkers are very effective and add a dimension to the golfing challenge. Country clubs, resorts, and championship courses all utilize a combination of sand and grass bunkers. All bunkers must receive proper drainage.

Contouring—Interest, challenge and beauty are all incorporated into great courses by the architects ability to sculpture the grounds with contours that are pleasing to the view, without presenting too much difficulty.

Such contours take special attention from the architect and superintendent regarding proper drainage and irrigation. Mowing, maintenance, and fertilization programs may all be affected if the slope is not correctly analyzed.

Many flat course sites have been sculptured by moving millions of cubic yards of earth to create a "natural" setting with smooth transition of grades.

Irrigation—Golf course irrigation systems are relatively simple to design, yet there is a difficulty factor in establishing ultimate control and efficiency. Approaches to irrigation design and maintenance vary greatly.

Years ago manufacturers provided design services for golf courses to help sell their products. The competition being very great, the manufacturers tended to stretch the design to utilize fewer and fewer heads to win the job. Modern design by private consultants and golf architects utilize a general spacing of 65 feet on center to provide the best uniform coverage, although this does vary in regions. The manufacturers either compete at this level, or in most cases, it is specified on the plans by the designer.

The key to irrigation on a golf course lies in four areas: control, flexibility, water conservation and maintenance. Other considerations are soil, water quality, water availability and budgets.

Irrigation systems, whether battery type or valve in head, require separation of control. The tees, roughs, fairways, greens, nursery, etc., must all be separated for complete control. Golf course superintendents work with the architect to develop a system compatible with management objectives. Fresh water systems are frequently utilized for syringing in systems with reclaimed water.

Computerized controls are being installed on most golf courses being developed today. These controls effectively lower the total water use, maximize the efficiency and control pumping power usage for the operation.

The hydraulics of the system, generally looped, require that the designer provide computer calculations modeling the recommended programming schedules, fertilization schedules and syringe schedules.

Most golf courses receive their water for irrigation from an irrigation lake. The reason generally is that the golf course

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Landscape architects must often take a site without inherent natural beauty, haul in truckloads of sand or soil and shape it and plant it to provide a natural setting.



Penalties

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water requirements for the irrigation period are very high and would burden most distribution lines with a pressure drop at best.

The golf course lake can receive the water over a 24 hour period at a lower flow to facilitate the higher demand of the 10 hour irrigation operation. This requires that the lake be designed for the proper storage and allowable "draw down" during irrigation.

A potentially aesthetic lake can look very unpleasant when the lake is near empty after morning irrigation, and is not full again until late in the afternoon.

Tees and Greens—The tees and greens, as the starting point and ultimate target, are probably the most memorable part of any course. The tees should be constructed to stand the abuse they receive from players. The size should be sufficient to move the tee placements and allow the turf to regenerate.

Four and five pars should have 4,000 to 6,000 square feet of teeing areas and three pars up to 7,000 square feet. Four to five teeing areas should be allowed for each hole to provide interesting alternatives, length of hole variations for the different golfing abilities, and turf regeneration.

The greens, the ultimate target and the essence of scoring, must be constructed properly. The United States Golf Association (USGA) has provided standards that have proven to be quite successful. Variations from this can only lead to ultimate dissatisfaction.

The USGA specifications call for the subbase to be constructed with drainage tiles, gravel, sand and seedbed mixture.

The golf course lake can receive water over a 24-hour period at a lower flow to facilitate the higher demand of the ten-hour irrigation operation.

The actual green shape, contouring, size, etc., is the responsibility of the golf architect. The size of the green can range from 4,000 to 8,000 square feet or even larger in some instances. Pin placement studies and golf hole strategy come into the final decisions regarding size.

The contour of the green should never be overly severe. Rather, it should be such that a well-struck ball would not receive a penalty. The "greensite" area includes the green and its immediate surrounding. The total design for the greensite should incorporate automated maintenance whenever possible. Dimensions should be calculated to ensure cross mowing without extra difficulty.

Practice Areas—Every course of any quality has an adequate practice area. The avid golfer requires practice and warm-up prior to playing. The design and placement of the practice area should not endanger players yet be close enough to the clubhouse for access.

Further Considerations—There are a multitude of considerations when designing a golf course. Items to consider fur-

ther are: *soil*—as it affects grading, drainage, irrigation, and turf species; *water*—as it affects the quality and quantity of turf species in irrigated areas; *maintenance*—actual maintenance programs, actual maintenance facility requirements, and how they affect design; *budgets*—how they affect the final outcome; *clubhouse areas*—how they affect the design and space allocations; *dimensions*—actual dimensions that are acceptable as minimums for design of the golf holes; *grading*—balancing the earthwork; *field time*—how much field time is required by the architect; *future*—allowances for future considerations, etc.

It would take an entire book to adequately assess the golf architect's philosophy. Every golf architect would in fact have his own particular methodology and philosophy.

What are the hidden secrets of great golf course design? They are really the result of understanding all the elements of the game, appreciating the varying ability of the golfing public, and having skill as a land planner, artist, engineer, landscape architect, and conservationist with intimate knowledge of the theory of golf.

As we progress to better golf architecture, we are confronted with problems that are increasingly interdisciplinary in nature. Besides understanding golf architecture, the golf architect should be qualified in all disciplines that affect the ultimate in golf design. ▶

Editor's Note: Cal Olson is a land planner, civil engineer, landscape architect and water conservationist based in Newport Beach, Calif. He is considered an expert in irrigation and lake design with 25 years of experience.

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CHEVY CHASE SUPER SPAWNS SPORTS SERVICE

George Renault, superintendent at Chevy Chase Country Club, Chevy Chase, MD, was looking for a new cause. After 12 years of serving as a Big Brother, he retired when his own children were born. As they grew he couldn't help but notice the poor condition of the fields his children played on at school and in parks. It bothered him to see these fields and do nothing about them. His new cause became helping Fairfax County public schools and parks improve their playing fields.

After long discussions with Fred Grau, director of the National Sports Turf Council, he knew he'd found his new mission in life. Why couldn't he, or any other golf course superintendent, volunteer a little time to inspect area sports fields and make recommendations to improve them? Area extension specialists could use the help and certainly the condition of many area fields indicated a need.

Renault also knew, from attending area turf shows, that you couldn't force help on schools. The people doing field maintenance didn't really feel comfortable asking for help. The only way to provide the assistance was to be invited to help by the school superintendent.

However, the job was bigger than one person could handle effectively. To do it right, letters had to be mailed out to area school administrators, a central contact for requests was needed, and a number of golf course superintendents from the Washington, DC, area were needed to make field inspection practical. The best answer was to enlist the help of an area golf course superintendents association.

One rejection didn't stop him. He found the Greater Washington Golf Course Superintendents very receptive to the idea. The GWGCSA board approved the plan and 25 superintendents quickly volunteered their time to the project. The first letter to area superintendents was mailed this month and extension turf specialist David Chalmers has set up a sports turf seminar for this spring.

"We are writing letters now to school administrators about this free service and the February 27 seminar for people who manage school facilities," Renault said.

"First, we want to find out what kind of program they have, then we'll make recommendations. Most of the problems we see are caused when the field is allowed to grow unchecked in the summertime to a foot or

higher. Then the janitor mows it down to two inches in late August, it looks terrible and thatch problems result.

"Mainly we are trying to encourage them to fertilize, mow properly, and maintain the field with weed control and overseeding. Most of the fields in the area are a mixture of tall fescue, ryegrass and Kentucky bluegrass. Overseeding with perennial ryegrass, proper fertilization, and aeration can do wonders for most fields."

The Greater Washington GCSA will receive calls and refer them to the nearest of 25-30 volunteers. "We will take one of the first requests and do much of the work ourselves so we have a demonstration field for other schools to see," says Renault. "We could benefit greatly from a set of recognized field maintenance standards."

"We just want to be an extension of the extension agent and make calls where the county agent can't because of his workload. We want to offer information that can help kids. We don't want to come in an take over from the maintenance person or the contractor. We just want to share some of the things we have learned from the golf course."

AGCHEM NAMES WELLIK FIELD DEVELOPMENT HEAD



Michael J. Wellik has been named manager of field development for the Agchem Division of Pennwalt Corporation.

In his new assignment, Wellik will be responsible for the development and implementation of field research and development programs for Agchem products, as well as supervising the field personnel staff in the U.S.

Prior to his present position, Wellik was a regional sales manager based in Indianapolis, IN. He is a graduate of the University of Kansas with a bachelor's degree in

biology. He earned a master's degree in entomology from Iowa State University.

TARA RYEGRASS

Tara perennial ryegrass is a top performer in many national turfgrass tests. Developed under the supervision of Rutgers' Dr. C. Reed Funk, Tara is a dark green, low-growing perennial ryegrass with improved mowing qualities, good heat tolerance, and winter hardiness.

GOLF GREEN EVOLUTION DESCRIBED IN BROCHURE

"Evolution of the Modern Green," written by Dr. Michael J. Hurdzan while president of the American Society of Golf Course Architects (ASGCA), has been published to provide comprehensive information on green design, construction and maintenance.

The 24-page brochure contains a variety of colorful illustrations. The four-part presentation deals with the historical aspect of greens, the engineering phase, proper construction and modern maintenance procedures.

"Evolution of the Golf Green" provides in-depth information for those planning a new course or remodeling an existing layout. The ASGCA believes that the new brochure will be helpful to superintendents, greens committees, golf professionals, club managers, developers, municipalities and others interested in building and maintaining

the best possible greens.

To obtain a copy of "Evolution of the Golf Green," send a \$5 check to ASGCA at 221 N. LaSalle St., Chicago, IL 60601.

HUNTER INDUSTRIES NAMES MARKETING MANAGER



Hunter Industries, a San Diego-based manufacturer of irrigation products, has appointed William Hunter as advertising and promotions manager. Hunter previously directed marketing for Equitech Products, Inc., of Snowmass, CO, and was actively involved in the development and promotion of the Jackson Hole Ski Resort in Wyoming.

Hunter Industries opened a new 42,000 square-foot administrative and manufacturing facility in San Marcos, CA,

NATIONAL SPORTS COUNCIL LAUNCHED AT 2ND FORUM

Fifteen sports turf specialists met for a second time at the U.S. Department of Agricultural Research Center, Beltsville, MD, in an effort to speed up the dissemination of technical information on proper sports turf care.

The group included extension turf specialists, Sports Turf Managers Association Executive Director Kent Kurtz, Professional Grounds Management Society Executive Director Allen Shulder, The Lawn Institute Executive Director Eliot Roberts, and Fred Grau, chairman of the Musser Foundation. Jack Murray, USDA turf researcher, hosted the forum.

The first forum this past spring was held to review all existing literature on sports turf management for distribution to others needing it. At that time, a Sports Turf Research and Education Council (STREC) was formed to provide a central source for technical information on sports turf.

During the second forum the group viewed an American Society of Agronomy slide program on sports turf management as well as a videotape on Astroturf by Monsanto. Extension agents from six states updated the group on their research and educational support to the market.

The final decision of the forum was to rename the STREC the National Sports Turf Council (NSTC). The goals of the organization remain the same—to collect and disseminate existing information on sports turf and to fund research into new sports turf technology. The initial funding for the NSTC will come from charter membership dues in two categories, affiliate and subscriber members. Affiliate members will be existing industry associations involved to any extent in sports turf management. Subscriber members will be suppliers to the sports turf industry. The amount of the dues has not yet been determined.

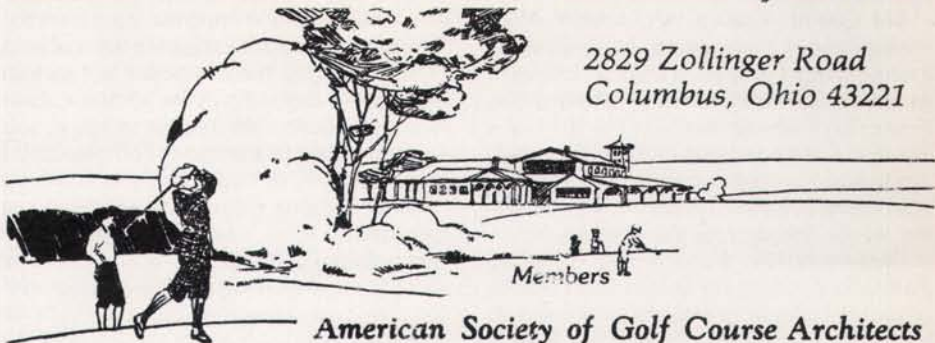
For more information on the NSTC, contact Fred Grau, P.O. Box AA, College Park, Md. 20740, (301) 864-0090.

ENKA TO DISTRIBUTE SOIL STABILIZER IN U.S.

Enka Geomatrix Systems has acquired distribution rights to a soil stabilizer and erosion control material widely used in Europe called Armater. The product is a three-dimensional, semi-rigid geomatrix made of non-woven polyester fabric.

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PHOENIX EAGER FOR MAJOR SPORTS FRANCHISE

The City of Phoenix, AZ, wants a major football and/or baseball franchise so much it is dangling a proposed stadium complex as an enticement. As teams like the San Francisco Forty-Niners and the St. Louis Football Cardinals have told the press they are looking for better homes, the Phoenix offer advertised in *Sporting News* is causing waves throughout the leagues.

Phoenix copied a chapter out of the St. Petersburg, FL, team acquisition book by advertising openly for stadium proposals with the obvious invitation for existing league teams to take part. Geoffrey Gonsler, sports complex coordinator for Phoenix, told *sportsTURF* the city's request for proposals is entirely contingent upon granting of a sports franchise to the city. Since the proposals are due by mid-February, it's likely the main contenders for a Phoenix franchise will have to identify themselves shortly.

Gonsler and the Phoenix Long Range Planning Committee anticipate a multi-purpose stadium will be ready for the 1987 football season. The mayor and city council want to select the developer by March 1, 1986.

A 66-acre site in the downtown area has already been established for the stadium. The city hopes the developer will include hotels and shopping in the complex. Even a mass transit train system is being suggested as part of the sports complex by the year 2000.

Jim Forsberg, Central Phoenix Redevelopment Director, says additional uses for the stadium complex will be sought, so as not to create an additional financial burden on the city or developer but to reinforce the ability of the private sector to carry out more of the financial aspects of the project.

Gonsler said the city has consulted Major League Baseball and the National Football League for their requirements of a stadium. Major League Baseball has recommended a baseball-only facility with natural grass and adequate lighting. It also suggested seating for 35,000 to 45,000 fans, luxury suites in the stadium and state-of-the-art video scoreboards. The League provided a sample of club operating expenses totalling \$24 million. Out of this figure it listed \$2.8 million each year for stadium operations and \$500,00 for spring training expenses.

answer sessions round out an already full program.

Registration is limited to 500 so Kent Kurtz, conference director, encourages turf managers to send \$25 before March 10 to Sports Turf Institute, Cal Poly University, 3801 W. Temple Ave., Pomona, CA 91768 or call (714) 598-4167.

EQUIPMENT DISTRIBUTORS CREATE BUSINESS GROUP

Forty old-line commercial turf equipment distributors have formed a trade association to meet an increasing need for business information. The new National Equipment Distributors Association (NEDA) will help members share ideas on internal operations, such as computer systems, employee compensation, product and service marketing, and other ways to improve business.

"We've come together to address pressing concerns in these volatile times for our industry," said Robert G. Johnson, president of Illinois Lawn Equipment, Inc., Orland Park, IL, and chairman of NEDA.

The NEDA board defined its membership as primarily equipment distributors throughout the U.S. and Canada that serve golf courses, parks, cemeteries and other grounds operation in the 10 to 1,000 acre range.

David DeBra of DeBra Turf and Industrial Equipment, Hollywood, FL, is vice chairman and Frank Higgins of Sawtelle Brothers, Inc., Swampscott, MA, is secretary treasurer. For more information, contact Ralph Wiken, NEDA, 9031 West 151st St., Suite 200, Orland Park, IL, 60462, (312) 641-2800.

STMA ORGANIZES EAST COAST SEMINAR

You don't have to live in California or Texas to attend a regional sports turf seminar anymore. The Sports Turf Manager's Association has arranged for more than 15 sports turf specialists to speak during a one-day seminar in Valley Forge, PA, March 4, 1986.

Jack Murray of the U. S. Department of Agriculture Turf Research Center in Beltsville, MD, Dr. Fred Grau of the National Sports Turf Council, Eliot Roberts of The Lawn Institute and Dr. Henry Indyk of Rutgers University are all leaders in building a better sports turf movement in the U.S. All will speak at Valley Forge.

Providing regional expertise will be extension turf specialists David Chalmers from Virginia Polytechnic Institute, Blacksburg, Tom Turner from the University of Maryland, Beltsville, and Jack Harper from Penn State University, University Park. Participants can benefit from a broad range of experience in neighboring areas.

Rounding out the program will be Tim Bowyer, president of Southern Turf Nurseries, speaking on field construction; John Demateo of Lofts Seed discussing quality seed; John Macik, sports medicine coordinator for the National Football League, talking on injuries; David Heiss, president of Turf Services Inc., covering drainage; Joe Barney of Warren's Turf Nursery speaking on geotextiles; and Ransomes' Mike Latino on equipment selection.

STMA is planning a similar program in the future for the Chicago area. For information contact Kent Kurtz, STMA, 1458 N. Euclid Ave., Ontario, CA 91764 (714) 984-4677.

CAL POLY HOSTS SPORTS TURF INSTITUTE

Cal Poly University, Pomona, CA, in cooperation with the Sports Turf Managers' Association, is hosting the 3rd Annual Sports Turf Institute, March 27, 1986. A half-day educational program and outdoor and indoor exhibits are provided during the one-day event for all types of turf managers and athletic directors.

Many national sports turf experts will be on the program. Dr. William Daniel, inventor of the Prescription Athletic Turf System and former Purdue University Agronomy Professor, will cover reducing compaction on a modest budget. David Heiss of Turf Services Inc. will cover field drainage. Steve Wightman, facility manager at Mile High Stadium in Denver, CO, will speak about helping turf withstand a bizarre combination of events.

Brian Bossard, field manager at San Diego Stadium, will cover baseball infield preparation while Barney Barron, from the San Francisco Parks and Candlestick Park, provides insight into coping with heavy traffic on fields.

Softball field construction, overseeding, weed control, repair of goal areas, and gopher control are just a few of the more than 15 topics to be covered in the split sessions. Panel discussions and question and

POGUE APPOINTED IRRIGATOR PRESIDENT

William R. Pogue has been appointed president and chief executive officer of Irrigator Company, Inc., Riverside, Calif. He joined the firm in 1980 as sales manager and most recently served as its vice president and general manager.

A graduate of the University of Notre Dame, Pogue resides in Riverside with his wife, Pam, and daughter, Erin.

Irrigator has been active in the field of soil moisture sensing equipment and irrigation management since its founding in 1951.

LEGEND GOLF CAR OPENS OWN DESERT STORE

Legend, maker of golf cars, recently opened its third company-owned store and service center, this one in Palm Desert, CA. The company is going against a trend in the industry of not owning dealerships.

Cliff Kirkbride, former regional sales manager for Legend in Boca Raton, FL., will manage the new California showroom and service center. The store will feature all models of Legend golf cars and will be the exclusive distributor for Royal Ride golf cars. A mechanic will be on the premises for full service and repair.

The golf car market in Palm Desert has the double benefit of a strong golf course development and an up-scale retirement community.

HERSHEY RESORT HEAD ANNOUNCES RETIREMENT

Kenneth Hatt, president and chief operating officer of Hershey Entertainment & Resort Co. has announced his retirement as of Feb. 28, 1986. Hatt, a Hershey, PA, native, has served the company for more than 45 years. He has been chief operating officer of the Entertainment and Resort company for the past six years.

The company operates five hotels and resorts in Pennsylvania and Texas; a theme park and entertainment complex in Hershey; an amusement park in Connecticut; an American Hockey League team; a zoo and botanical garden; and a variety of commercial enterprises including a campground.

J. Bruce McKinney has been elected by HERCO's board of directors to succeed Hatt effective March 1, 1986. McKinney is currently executive vice president of HERCO. Previously, he was senior vice president of HERCO's commercial group, group vice president of sports and entertainment, and general manager of Hersheypark. He has worked for the company since 1971.

WINTER RESORTS LIKE SUMMER GREENS FEES

Resorts in ski country are discovering the benefits of summer cash flow and higher real estate property values associated with golf. This is the opinion of John Watson, president of the American Society of Golf Course Architects.

"With their rolling terrain, ski resorts usually have a site that can be transformed into a challenging golf course," Watson notes, "and the owners recognize the long-term benefits that can be realized by catering to the growing number of golfers during warm months."

"Many of the courses in the Snow Belt that include housing have taken a page from the successful resort developments in the Sun Belt," adds Watson. "We see this trend continuing as owners tend to maximize the return from their investment."

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CHALKBOARD

TIPS FROM THE PROS

Roses Get a Shot of Iron

The Tournament of Roses keeps tight control of its annual New Year's Day event, from the petals on the flowered floats to the blades of grass in the Rose Bowl. The emphasis is on natural and that includes the field. Although many stadium managers will help out the television cameramen with an application of green colorant to the field, the Tournament of Roses directors forbid it at the Rose Bowl.

Kent Kurtz, consultant to the Rose Bowl, wanted viewers celebrating New Year's Day at home to see a field as green as any other major event. Kurtz turned to PBI Gordon of Kansas City, MO, for help in the form of Ferramec, a sprayable combination of iron, sulfur and urea. Five days before the big event, the Rose Bowl crew applied the color booster to the field in two directions, for a total application of 10 ounces per 1,000 sq. ft.

If you saw the game, you know Kurtz got his wish, a field as green as nature can make it. Of course, the turf that responded so beautifully to the iron compound was Gold Tag Brand perennial ryegrass blend provided by Ferry Morse Seed Company and Turf Seed, Inc. The combination of Citation II, Birdie II and Manhattan II provided the bright green background the game.

One can say the turf at this year's event was as spectacular as the floats in the parade.

When Drainage Fails

Athletic field maintenance gets progressively unreliable as old drainage systems silt up or fail altogether. The thought of excavating every tile line under the field is the last thing a field manager wants to face. Just ask Harry Gill, field manager for the Milwaukee Brewers Baseball Club.

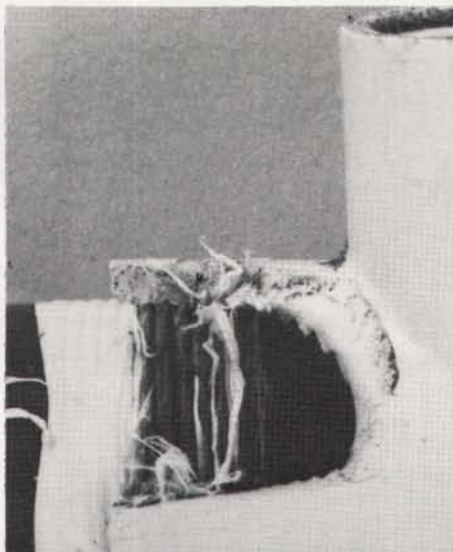
Milwaukee Stadium hosts the Brewers during baseball season and then the Green Bay Packers in the fall. Harry had to fit in the drainage work between the two sports seasons and before winter.

Gill, one of the deans of stadium field management, knew sand slitting could do the trick without major disruption to the turf surface. Sand slitting is the process of cutting a gridwork of narrow trenches which drain to the tile on the edge of the field, then backfilling these trenches with sand. David Heiss, president of Turf Services, Spring Lake, Mich., has a single device imported from England which performs the task that would normally require a trencher, a backfiller and backhoe.

The narrow sand-filled trenches are easily hidden after seeding and the turf around the trenches grows back over the sand. Harry now has his drainage back and a field that will be in professional condition for the Brewers' opener in April.

One Turn Too Many

Swing joints are one of the best ideas conceived for turf irrigation. If someone or something steps on or runs over an irrigation head the pipe below sinks out of harm's way. The



Swing joint broken by overtightening.

trick is buried under the surface, a joint which allows the pipe to swing to the side rather than break. The give is derived from loosening and tightening of the joint.

Swing joint assemblies made of iron or steel pipe have a great tolerance to extra tightening, but the PVC pipe commonly used today is not so forgiving. The thought of a leaking loose joint below ground causes some irrigation installers to overtighten PVC joints.

Larry Workman of Lasco Division of Phillips Industries says installers need to recognize PVC pipe requires different installation procedures than metal. When the male pipe threads wedge against the female threads a certain amount of force is exerted. If this force exceeds the tensile strength of the pipe (7000 pounds per square inch) the joint will crack or break.

Workman recommends applying a paste-type pipe joint compound. Turn until finger tight, then add one to two more turns with a strap wrench. This will leave three to six male threads exposed and give the joint the necessary leeway for swinging.

Harrowing Experiences

As the importance and use of the core aerator grows, another tool is being employed for dispersing the left oversoil cores: the tine harrow. Once a sports turf manager has a tool in his shed, he tries to use it for as many jobs as possible.

Following the PGA at Oakhill Country Club, Richard Bator was faced with roughs trampled down by the galleries. Suspecting compaction, he aerated and brought out his Fuerst harrow with tines down to lift up the turf and make grooves in the soil surface. His crew overseeded, turned the harrow onto the smooth side and dragged the area to cover the seed. "The process brought the roughs back to life beautifully," Bator boasts.

Compacted and wet infields were a problem for John Moran at Columbia University. The sand clay soil mix would pack down after just a few games and stay wet too long following rains. He needed a fast way to loosen and dry the soil out.

After some thought, he decided it was easier to use a harrow to loosen the soil and mix in Turface or Diamond Dry than to hand rake. He had his crew go over the field with the tines down to loosen the surface and knock down any ruts or bumps. Then they spread the drying compound and went back over the field with the smooth side of the harrow. "The baseball teams now miss fewer practices and games than they used to since the infield is more manageable," says Moran.

Winter overseeding of bermudagrass fairways at Desert Inn Country Club, Las Vegas, NV, includes the use of a harrow. Superintendent Gary Meyers describes how he overseeds his course prior to the LPGA Desert Classic. "First thing we do is scalp the bermuda as low as we can get it, wall to wall. The cutting height is slightly under 3/8 inch. Next, we bring the harrow in and go over the area four times in four directions. Our next step is seeding. Then we go over the fairways twice in two different directions. Following that, we mow again, rope it off and water it. I believe the harrow gets the seed down and spreads it out.

Finally, Bruce Jackman of Clarkston Golf and Country Club, Clarkston, WA, uses a harrow in his sand topdressing program. After aerifying, Jackman spreads a thin layer of sand with a Lely spreader with a sand ring in it. Using the smooth side of the harrow, Jackman spreads the sand and breaks up the cores evenly over the area. The sand enters the open aerifier holes and the cores are broken down.