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Ditch Witch

PREVENT OR CORRECT DRAINAGE AND TRAFFIC TO SLOW DOWN COMPACTION

By RON FREEM, golf course architect



Drainage problems are evident on this fairway.

The link between tee and green is regularly overlooked when construction occurs. How often is the topsoil scraped to form sand bunkers, elevated tees, or greensites? The underlying hard pan, impermeable or infertile subsoil that remains offers little as a friable growing medium.

Fairway areas, the aprons which surround a putting green, and the approach areas to the greensite deserve attention during construction or remodeling.

Earthmoving can be extensive in order to make unusable land more

usable, to prevent or eliminate blind shots, and to transform the flat into the interestingly con-

Swales can be added to keep water from discharging onto a fairway.

toured. Earthmoving should consider conservation of topsoil, existing and proposed drainage pat-

terns, and reestablishment of acceptable soil tilth.

It is possible for the golf architect to anticipate future drainage problems and to prepare a drainage plan for fairway areas as part of the set of construction working drawings. It certainly is less expensive to install catchbasins and subsurface drainage pipes during initial construction then to come back later and have to install them while play is underway.

Grading of fairways can provide surface drainage swales to collect and direct water flow. Attractive

contouring can be the result which is also fully machine mowable. Interceptor swales, catchbasins or open drains can be provided to prevent off course water from discharging onto a fairway.

Greensite aprons and approach areas frequently need soil amendments although these areas are ignored. The addition of organic humus, sand, the most desirable available sandy loam topsoil or a combination, can greatly assist in enhancing turfgrass growth.

It would be our recommendation to consider select gravel encasement, topped with washed sand in all entrance or exit areas of the apron around the putting surfaces. These drainage lines can greatly assist in carrying away excess surface runoff or subsurface seepage water. In either case, a reduction in compaction will occur.

In some specific instances of very heavy native soils, the green aprons may have to be covered with a sand and humus veneer in order to provide a drainable and compaction resisting seedbed.

Soggy areas fronting greensites are the result of surface drainage from the greensite and/or discharge of subsurface drainage pipes in the center of the fairway approach. A golf architect or construction superintendent should never stub off a drainage line in the approach area. However, all too often that is the situation, perhaps due to lack of concern or as a budgeting expediency.

The small extra cost of continuing all drainage outlets to sumps, ponds or other out-of-play areas is an investment in long term maintenance savings. Sand bunker drainage outlets should be similarly treated.

Inadequate tree clearing on a heavily wooded site can cause drainage problems due to insufficient sun to evaporate the water or inadequate air movement. Excessive shade also can induce disease problems. Turfgrass will not grow successfully in excessive shade and only playable turf is of primary consideration. Judicious tree thinning or removal may be a necessary evil but it can definitely prevent various maintenance problems.

A poorly designed or poorly functioning irrigation system can contribute greatly to compaction problems. Excessive wetness any-



Restrict golf carts to paths wherever possible.

where within the golf course will contribute to compaction and other problems as traffic passes. An irrigation system with improperly spaced sprinkler heads, heads with clogged nozzles, heads spraying directly upon adjacent trees or incorrect pumping pressure can all contribute to future problems.

Inadequate allowance for prevailing winds is another commonly encountered cause of both excessive wetness and excessively dried out areas. When effluent water is recycled for golf course use, an ever increasing occurrence, compacted or poorly drained seedbeds inhibit proper periodic leaching and can contribute to excessive salt build-ups and resultant turfgrass deterioration.

No matter how sophisticated the irrigation system or the number of digital readouts on the controller, if the design engineering is not correct, if the pumping plant is inadequate or if the operator of the system uses it incorrectly, compaction and other maintenance problems are sure to be the result.

The use of wide tires on all maintenance equipment or using dual wheels in place of singles will assist appreciably in reducing the incidence and severity of compaction. This effort should include all tractors, utility vehicles, the superintendent's truck and any other maintenance equipment.

The new electric fairway reel mowers present an opportunity to mow at a high and uniform rate of speed while applying less weight to the turf and requiring a lighter tractor to pull the units.

Golf carts may be considered a physical and financial necessity at many courses. Even with wide turf tires, repeat traffic of these vehicles contributes to the inducement of soil compaction on fairways. While golf cart paths are not an aesthetic beauty and may hinder or interfere with play at times, they are in the best interests of turfgrass maintenance. At the very least, paths should be provided in the most heavily concentrated traffic areas at tees and greens.

Careful, thoughtful positioning of the cart paths is necessary. Allow enough width so that carts do not consistently run over the edge. Maintenance equipment should also be required to travel on the cart paths wherever possible.

On courses where bag trollies are in use, it should be mandatory that every pull trolley have the recently introduced 4 inch (10 cm) wide wheels rather than the old style narrow ones. One bag trolley will not cause much problem but successive traffic by even these seemingly inconsequential devices will, with time, contribute to the compaction problems and the resultant added maintenance expenses. **WTT**

Ronald Fream is a well published golf course architect based in Santa Rosa, California. He studied horticulture and agronomy at California State Polytechnic University and Washington State University. He has worked under Robert Muir Graves and Robert Trent Jones and performed design work in 25 countries. Ronald Fream Partnership was formed in 1979, later called Ronald Fream Design Group.



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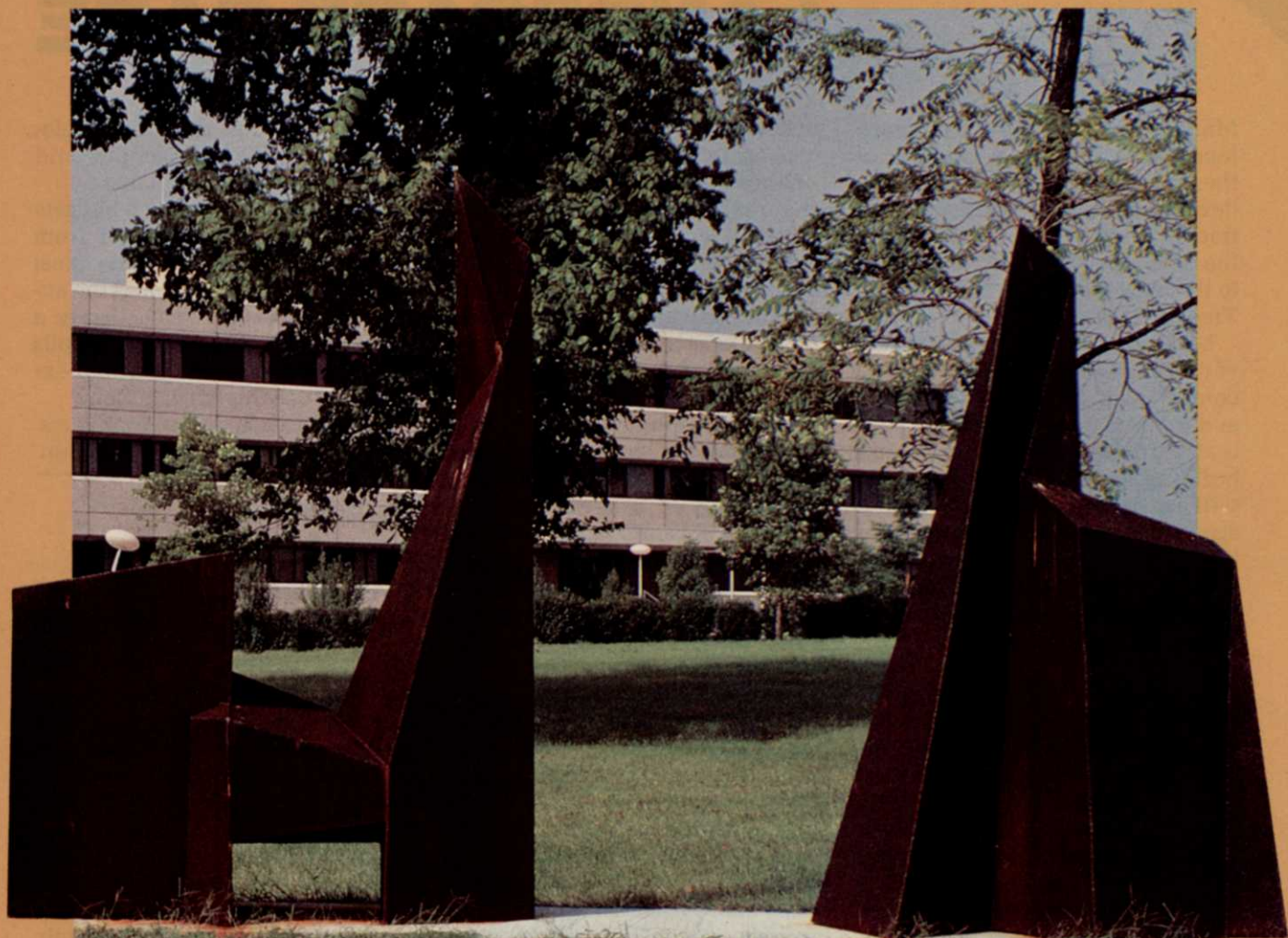
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LANDSCAPE MANAGEMENT



INDUSTRIAL PARK

WEEDS TREES & TURF

THE FUTURE IS BRIGHT FOR INDUSTRIAL PARK LANDSCAPE CARE

Management of industrial park landscapes is more a function of the individual tenant within the development, or a landscape contractor hired by the tenant, than the developer or owner, according to the most recent survey by *Weeds Trees & Turf* magazine.

More than two thirds of the survey respondents indicated total control over landscape planning and maintenance by tenants. Typically those parks where each building has a number of tenants will be managed by the owner's agent. Those parks where entire buildings are built and owned by individual companies will be less involved in landscape decisions.

Nearly half the industrial park representatives indicated their parks are not fully developed. Combined with the attractiveness of other ventures due to high interest rates, industrial parks may face a lag of investors in the near future.

Despite a temporary slowdown, industrial park development is a practical alternative to older, more expensive buildings in urban centers. The idea took off in the late 60's as the U.S. Highway System made suburban industrial parks not only accessible to truck transportation, but closer to employees. Industrial parks were often supported by chambers of commerce to provide controlled growth while increasing the tax base.

One industrial park developer in St. Louis told *Weeds Trees & Turf* private industrial parks are often sold to tenants five to ten years after development. Many have been sponsored by private investors who seek a five to ten year payback. The attractiveness of industrial parks as an investment faded slightly under high interest rates, when investors were guaranteed 12 to 15 percent without great risk. As

money rates fall the industrial park once again becomes attractive.

Other industrial parks operate like residential developments, where streets, utilities and rights-of-way are taken over by the city after the development is built. Whether private or public, industrial parks face zoning regulations often slanted toward "clean" industry.

Survey respondents said companies pay for landscape maintenance in a monthly maintenance fee, directly to a landscape contractor, or separate payment to the park staff. Each represents a third of the survey. The park staff may contract out all or a portion of the work. Two of the property management firms in the survey had landscape divisions.

In addition to the multi-company park, a larger group of single-company, campus style offices exist in suburban areas near major cities. Distinguishing between the two types of facilities for this report would have limited value. Considerably more research is needed to quantify the market. Projections from data we have would suggest there are more than 3,000 industrial

parks in the U.S. Add the single-company industrial campus and the total approaches 10,000.

Landscape maintenance budgets of our respondents ranged from \$3,000 to \$1.2 million. The most common figure \$18,000, and the average was \$30,350. Projection to a universe of 10,000 facilities results in landscape maintenance expenses exceeding \$200 million.

Park size ranged from four acres to 5,000 acres. The most common

Tenants have considerable control over landscaping of their buildings.

size was 25 acres, but the average was 200 acres. Half the industrial park respondents indicated acreage for future development exists in current parks. This would reduce the area intensively landscaped. Overall, maintenance cost ranged from \$150 to \$720 per acre.

Nearly two-thirds of the respondents are responsible for both interior and exterior maintenance. They have an average full-time staff

Table 1 Planning and Buying by Industrial Park Managers.

Month	Percent Planning	Equipment Percent Buying	Chemical Percent Buying
January	55	65	30
February	35	65	50
March	40	55	100
April	25	65	70
May	15	30	50
June	25	5	10
July	40	20	5
August	60	20	0
September	75	30	25
October	50	25	5
November	35	5	15
December	25	5	30

of 6 with part-time and seasonal help of 2 to 5.

Chemical purchases per year averaged \$4,250 for herbicides, \$3,000 for fertilizers, and \$2,075 for insecticides.

Industrial parks had an average of 6 push mowers, 3 riding mowers, 4 hand carried compressed air sprayers, 2 chain saws, and 3 pickup trucks. Larger spray units were owned by more than half the respondents and a third had turf aerifying devices. Roughly half the parks had some form of irrigation to serve less than half the acreage. Almost two thirds of the irrigation systems were provided by the developer.

Local landscape supply distributors are used by three quarters of the respondents. More than a third bought some chemicals or equipment from local retail suppliers. A

Two thirds of the survey respondents are responsible for both interior and exterior maintenance.

fifth bought some materials directly from the manufacturer.

Summary

As interest rates drop, not only will investors see industrial parks as more attractive, but companies seeking more efficient offices will become tenants or owners. The amount of undeveloped space in industrial parks may absorb the initial recovery, but the concept of suburban industrial parks remains an effective alternative to rising leases in urban centers.

As tenants take over parks from developers more landscaping work will be available to contractors. The fact that some property management firms are creating landscape divisions reflects the profitability and potential for this market.

Suburbs will continue to encourage development of clean, planned industrial parks to moderate the tax burden on homeowners. The motivation for future expansion of industrial parks exists today and will continue to grow.

WTT



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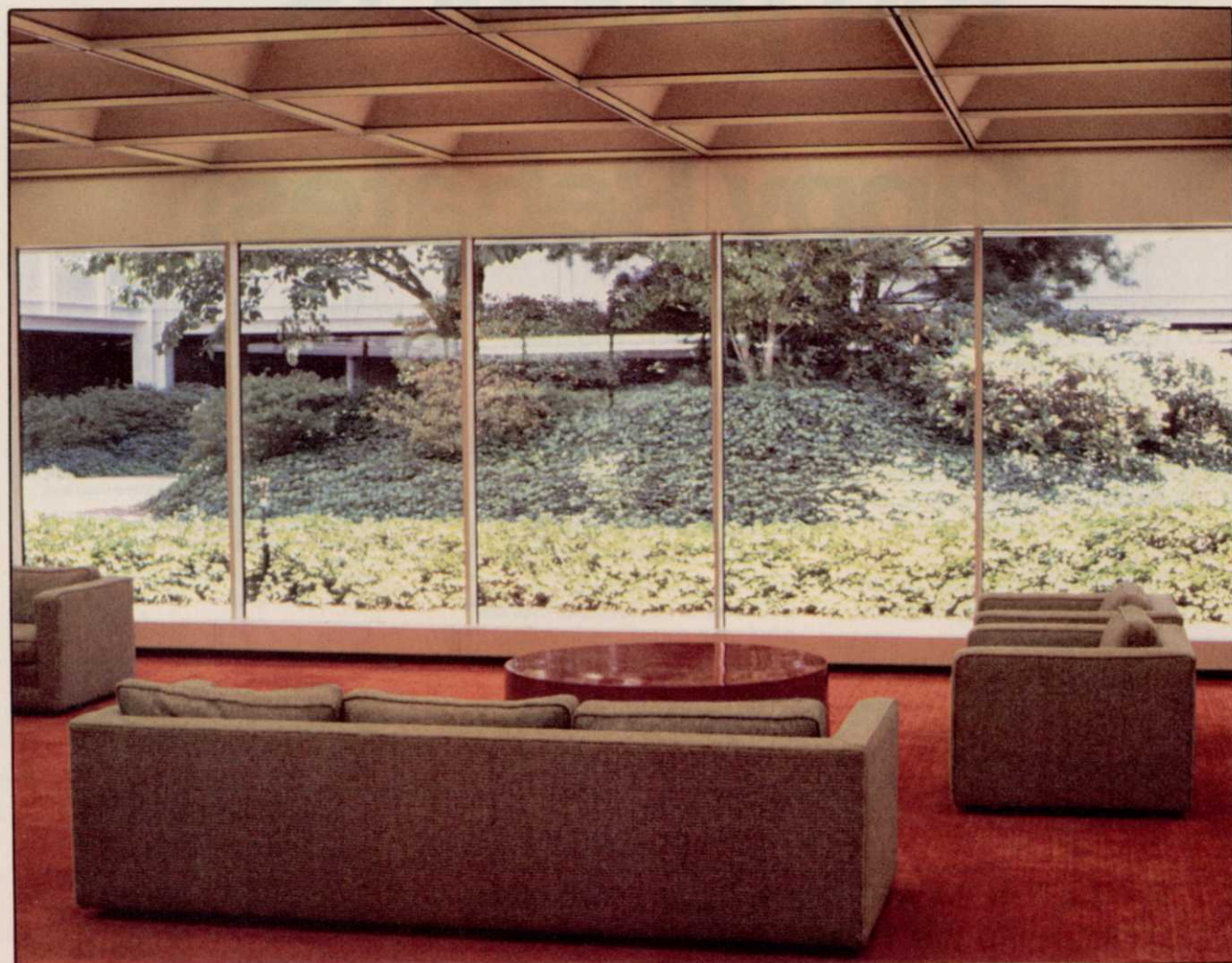
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GE SUPERINTENDENT HAWKS SPECIFICATIONS FOLLOWING EARLY TURFGRASS DISASTER

By THOMAS PACIELLO



View makes you feel like your in the headquarters of one of the country's largest corporations.

Two years after Elmer Toth accepted the job of superintendent of grounds and facilities for General Electric's corporate headquarters in Fairfield, CN, he could drop a quarter and not hit a blade of green grass. As you can imagine, GE's appreciation of proper maintenance skyrocketed.

The original turf failed because the topsoil left by construction crews was poor and the turfgrass used was not winter hardy. One cold winter and one hot summer wiped out acres of turf. Since Toth

joined GE following construction he could only try desperately to

Toth's main job is to decide how specifications should be altered from one year to the next.

save a poorly specified turf.

Those days are just a memory now. Visitors at GE are tempted to

bring along a three wood to tee off the fairway-like lawns. All of the 45 acres maintained are handled by contractors under the supervision of Toth. Specifications are his keys to control.

Outside contracting, according to Toth, has worked out just fine. "We're very happy with our contractor, Michael Labriola Inc. They take a lot of pride in their work and that is very important to me." He admits that there is a big difference between contractors and in-house staff. "With outside contractors I