The University of Manitoba

Southwood Golf and Country Club: A Study in Golf Course Architecture

A practicum submitted to the Faculty of Graduate Studies
in partial fulfillment of the requirements for the degree of
Master of Landscape Architecture
by

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SOUTHWOOD GOLF AND COUNTRY CLUB -

A STUDY IN GOLF COURSE ARCHITECTURE

BY

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Table of Contents

List of Figures

Introduction

This practicum focuses on the study of golf course architecture, in this instance the re-design of Southwood Golf Course. The intent of the practicum is to examine the major issues and problems inherent in the site, to develop a coherent method of analyzing those problems and issues, and to resolve them within the framework of a Master Plan. Like many golf courses constructed before World War II, Southwood may be rebuilt for the following reasons: the need to correct technical flaws in the original design and construction, the desire to improve strategy of play on the course, and the wish to improve flexibility of the course as well as to lengthen it.

Analysis of the site uses air photography, study of other golf courses, site reconnaissance, and information obtained through personal communication and from turfgrass conferences. Site analysis information is presented in a series of drawings (Figs. 1-5), with each drawing accompanied by a written explanation of the problems and issues pertinent to that drawing.

The Master Plan explores the principal issues presented in the site analysis through a manipulation of the interface between the horticultural (turfgrass component) and the ecological (existing 'natural' systems); see Figure 6. A detailed solution of one area of the Master Plan is represented in Figure 7 and in a model of portions of the second, fourth, fifth, sixth, and seventh holes (Figs. 8-13). The general guidelines for the turfgrass components of the golf course are outlined in Appendix 1. Appendix 2 compares the areas of existing greens, tees, and fairways with the areas of the greens, tees, and fairways in the Master Plan.

Existing Vegetation (Fig. 1)

Relict stands of native plant communities exist both as visual buffers along site boundaries and as a form of separation between adjacent holes. These communities are populated mainly by the following flora:

Canopy: *Acer negundo, Fraxinus pennsylvanica, Populus deltoides, Populus tremuloides, Quercus macrocarpa, Ulmus americana.*

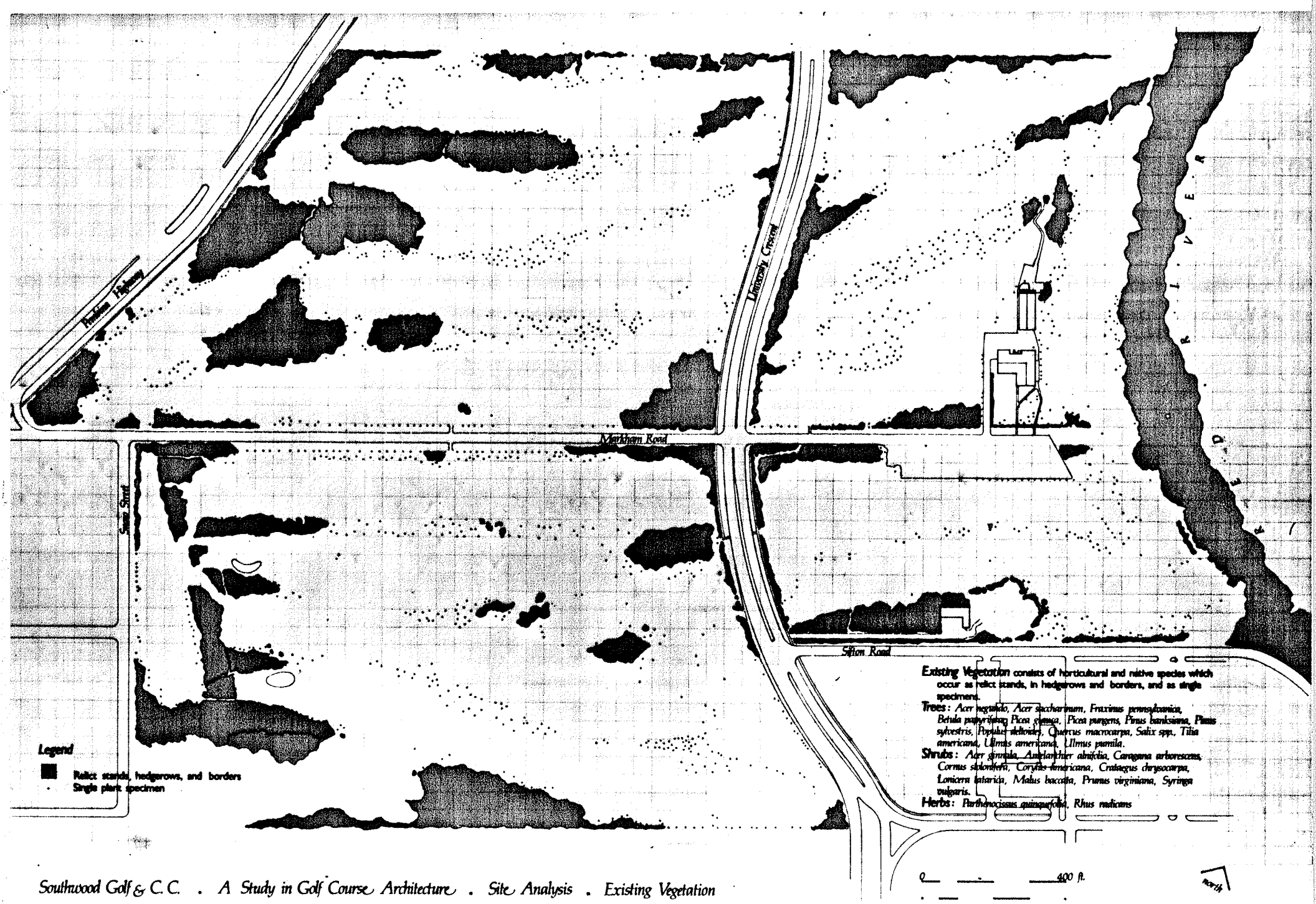
Understory: *Amelanchier alnifolia, Cornus stolonifera, Corylus americana, Crataegus chrysocarpa, Prunus virginiana.*

Herb stratum: The dominant herbs are *Parthenocissus quinquefolia* and *Rhus radicans.*

Since the site was first developed, both horticultural and native species have been planted as hedgerows, borders, and single specimens. These include:

Acer ginnala, Acer saccharinum, Betula papyrifera, Caragana arborescens, Lonicera tatarica, Malus baccata, Picea glauca, Picea pungens, Pinus banksiana, Pinus sylvestris, Salix spp., *Syringa vulgaris,* and *Tilia americana.*

Moist and wet sites such as drainage channels are dominated by *Carex* spp., *Phragmites communis,* and *Typha latifolia.*



Southwood Golf & C.C. . A Study in Golf Course Architecture . Site Analysis . Existing Vegetation

Irrigation System (Fig. 2)

Type: Semi-automatic

Pipe: Series 80 polyethylene for 8" , 6", and 4" diameter

Series 100 polyethylene for 3", 2", and 1 1/2" diameter

Sprinkler Heads

Greens: 'Rainbird' series No. 31, pop-up rotary sprinkler heads with a maximum triangular spacing of 70'.

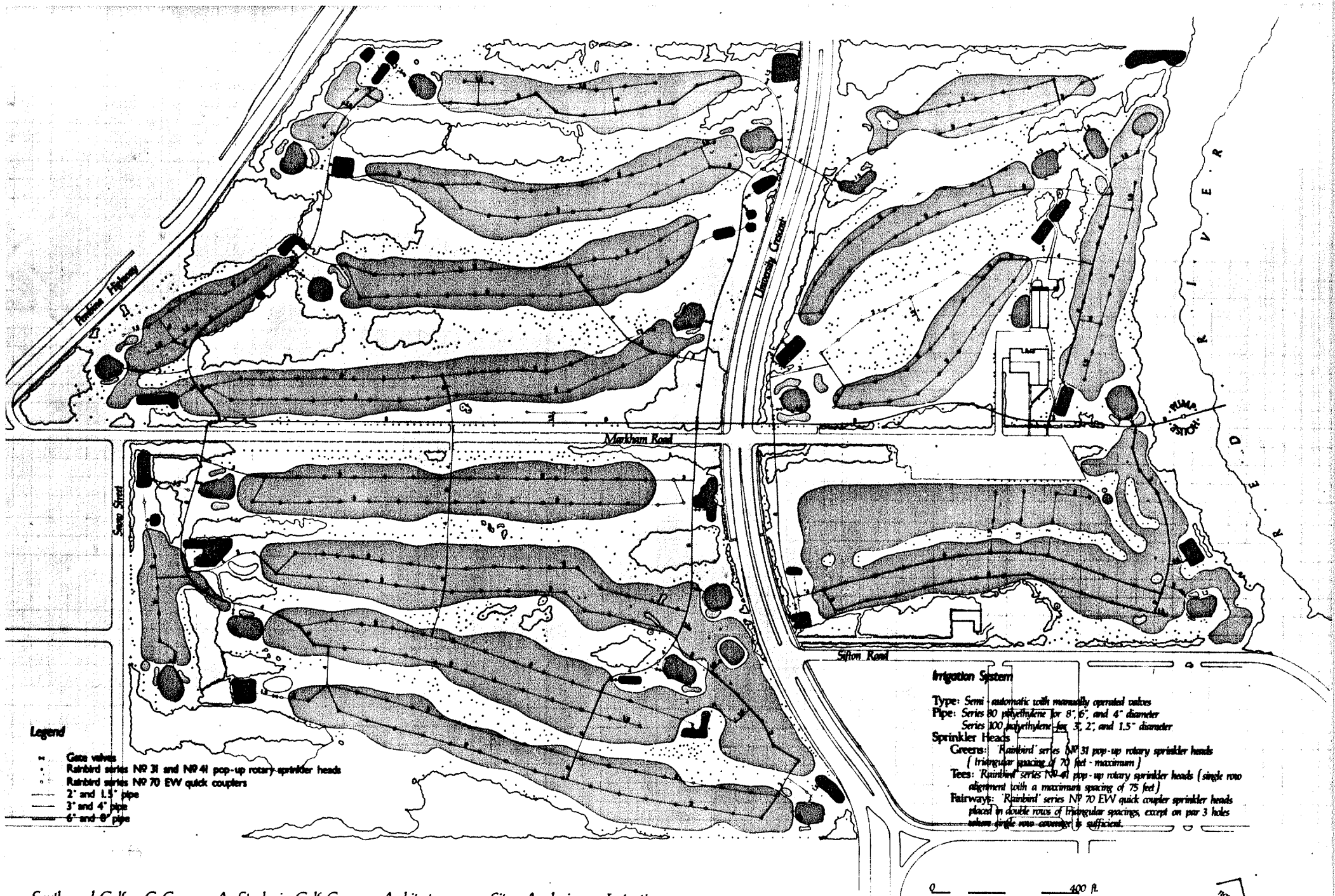
Tees: 'Rainbird' series No. 41, pop-up rotary sprinkler heads (single row alignment instead of triangular) with a maximum spacing of 75'.

Fairways: 'Rainbird' series No. 70 EW, quick coupler sprinkler heads, engaged manually when and where irrigation is required. Quick coupler assembly heads are placed in double rows of triangular spacings, except on par3 holes, where single row coverage is sufficient.

All sprinkler heads are activated through manually operated valves.

Problems:

1. The semi-automatic, manually operated system is labour intensive. It requires a night operator during the summer months.
2. Timing is not precise, as it would be with an automatic system.
3. The irrigation system could be utilized earlier in the season if a "floating" pump was used. The type of system desired should have determined the cost, rather than having the cost determine the type of system when the irrigation system was first constructed.
4. The degree of control over sprinkler heads, both in number of heads and duration of water application, is imprecise. Water efficiency is greatly increased through the use of a fully automatic system, as opposed to the present irrigation system.



Southwood Golf & C.C. . A Study in Golf Course Architecture . Site Analysis . Irrigation

Microtopography (Fig. 3)

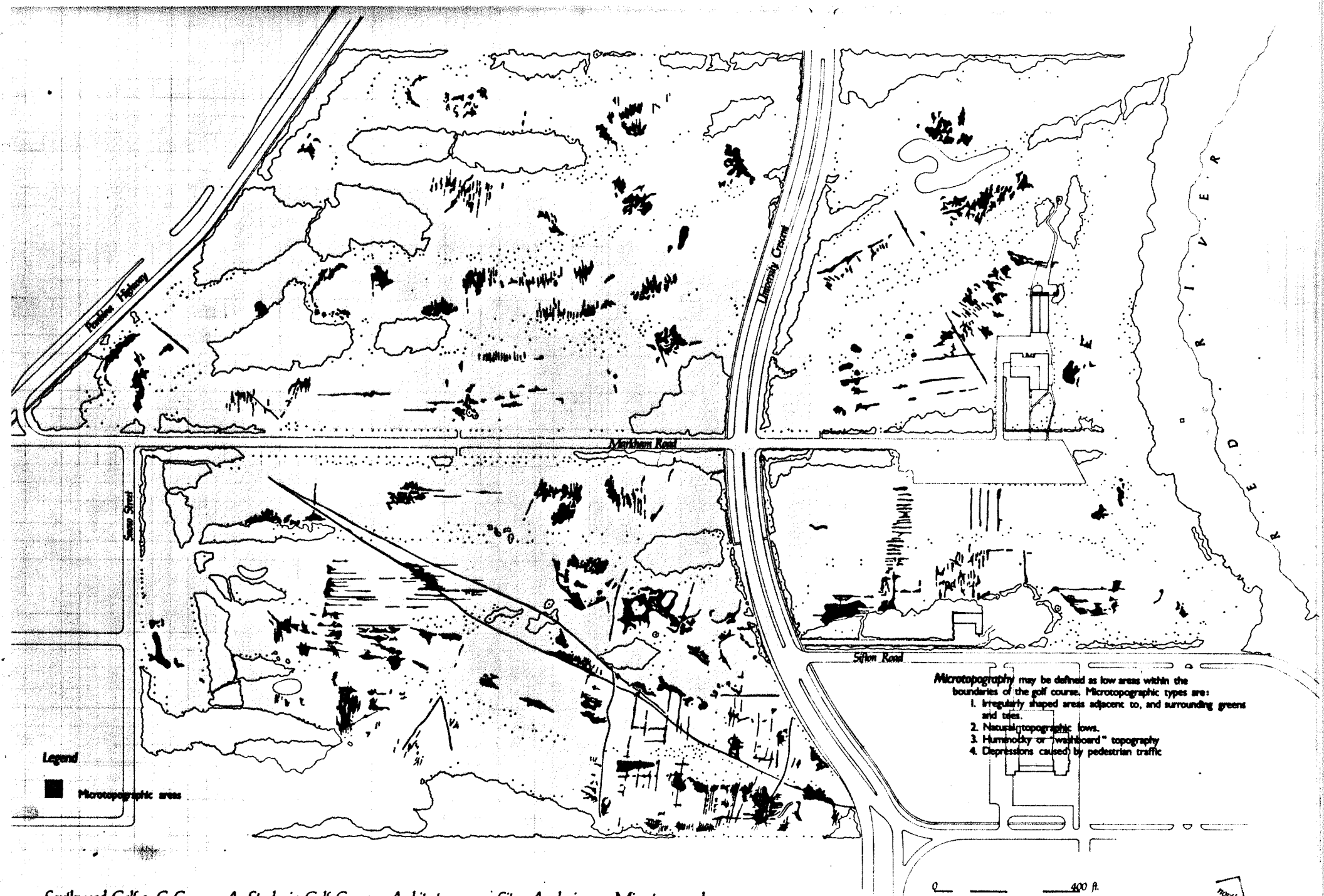
Microtopography may be defined as low areas within the boundaries of the golf course; these areas are usually populated by *Poa annua* and/or *Polygonum* spp. Microtopographic types are:

1. Irregularly shaped patches adjacent to and surrounding greens and tees where drainage has been impeded by the construction of the greens and/or tees. Pedestrian traffic in these areas results in compaction of the soil, which is only amplified by water applied through the irrigation system.
2. Natural topographic lows within the boundaries of the golf course.
3. Hummocky or "washboard" topography, probably caused by crude equipment used during construction of the original course layout.
4. Depressions caused by pedestrian traffic across the golf course. The resulting compaction of the soil and buildup of ice over the winter is often severe enough to prevent the growth of any plant species.

Maintenance problems associated with the presence of microtopographic areas are:

1. It is difficult to maintain a turf of sufficient uniformity, smoothness, and resiliency.
2. Poor internal soil drainage and poor surface drainage may cause these depressions to be populated by the less desirable plants, *Poa annua* and *Polygonum* spp. During severe winters, heavy ice cover will cause even *Poa annua* to succumb; consequently, no turf will grow.

The short-term solution involves a program of reseeding or resodding. The long-term solution involves extensive regrading to provide rapid surface drainage as well as the installation of subsurface drainage lines where necessary.



Southwood Golf & C.C. . A Study in Golf Course Architecture . Site Analysis . Microtopography

Existing Site Drainage (Fig. 4)

The existing site drainage is a composite produced from air photographs taken during spring runoff, site reconnaissance, personal observation during heavy rainfall, and discussions with the golf course superintendent.

Site drainage is considered in terms of the relative ability of water to drain either in an organized or unorganized manner by surface runoff and internal (subsurface) water movement.

a. Organized surface runoff moves in a series of swales and french drains toward the main drainage channel, running parallel to the north side of Markham Road and emptying into the Red River.
b. Unorganized surface runoff collects in low topographic areas within the site.

Because of the lack of slope (i.e., flat topography) and poor lateral movement of water within the clay soils, the method presently used to drain the site is incapable of handling runoff during heavy or prolonged rainfall. Once the soil profile is saturated, the resultant standing water may lead to increased soil compaction, conditions favourable for disease, scald, rutting, unfavourable playing conditions, and even course closure.

Not only must regrading be enacted on the fairways and in the rough, but all eighteen holes must be recontoured and reconstructed. Drainage within the site must be addressed as the primary issue in any project, at any scale. Its resolution demands a comprehensive (and coherent) understanding of the site and its hydrology.

> "Every effort should be made during initial construction to provide the surface contours necessary and the subsurface drain lines needed to facilitate removal of excess surface water" (Beard 1982, p. 222)

Southwood Golf & C.C. . A Study in Golf Course Architecture . Site Analysis . Existing Drainage

Existing Course Layout (Fig. 5)

Southwood was the first eighteen hole golf course to be laid out by the Canadian golf course architect, Stanley Thompson. Typical of many golf courses built during the 1920's, Southwood features small greens and tees. Little consideration was given to the placement of women's tees, or to existing conditions of the site, such as the flat topography, clay soils, and existing native vegetation.

Although changes have been made and improvements planned to all holes over the last 35 years, with moderate amounts both of success and of failure, the issues and problems inherent in the site remain. The most recent planning efforts have failed not only to address many major, long-term issues, but also to perceive minor problems and issues as part of a complex whole. Such efforts can only defeat the very purpose that they are intended to serve.

Issues that deal with the existing golf course layout and architecture may be summarized as follows:

1. Design balance. How well do the holes vary in length and configuration?

   Although the par 3 holes do vary in length and configuration, the par 4 and par 5 holes do not. All of the par 5 holes run in the same direction and are too similar in length, while the existence of five par 4 holes under 350 yards weakens the course layout.

2. Shot values. How fairly does the course reward accuracy, finesse, and power?

   For most men and women, the course is too long, chiefly because of these deficiencies: 1) the lack of three distinct and separate tee-boxes which retain the angle of play; 2) the installation of a

semi-automatic irrigation system, with subsequent 'ribboning' of fairways by modifying the line between fairway and rough, has served to increase the length of the course by decreasing the amount of roll on tee shots.

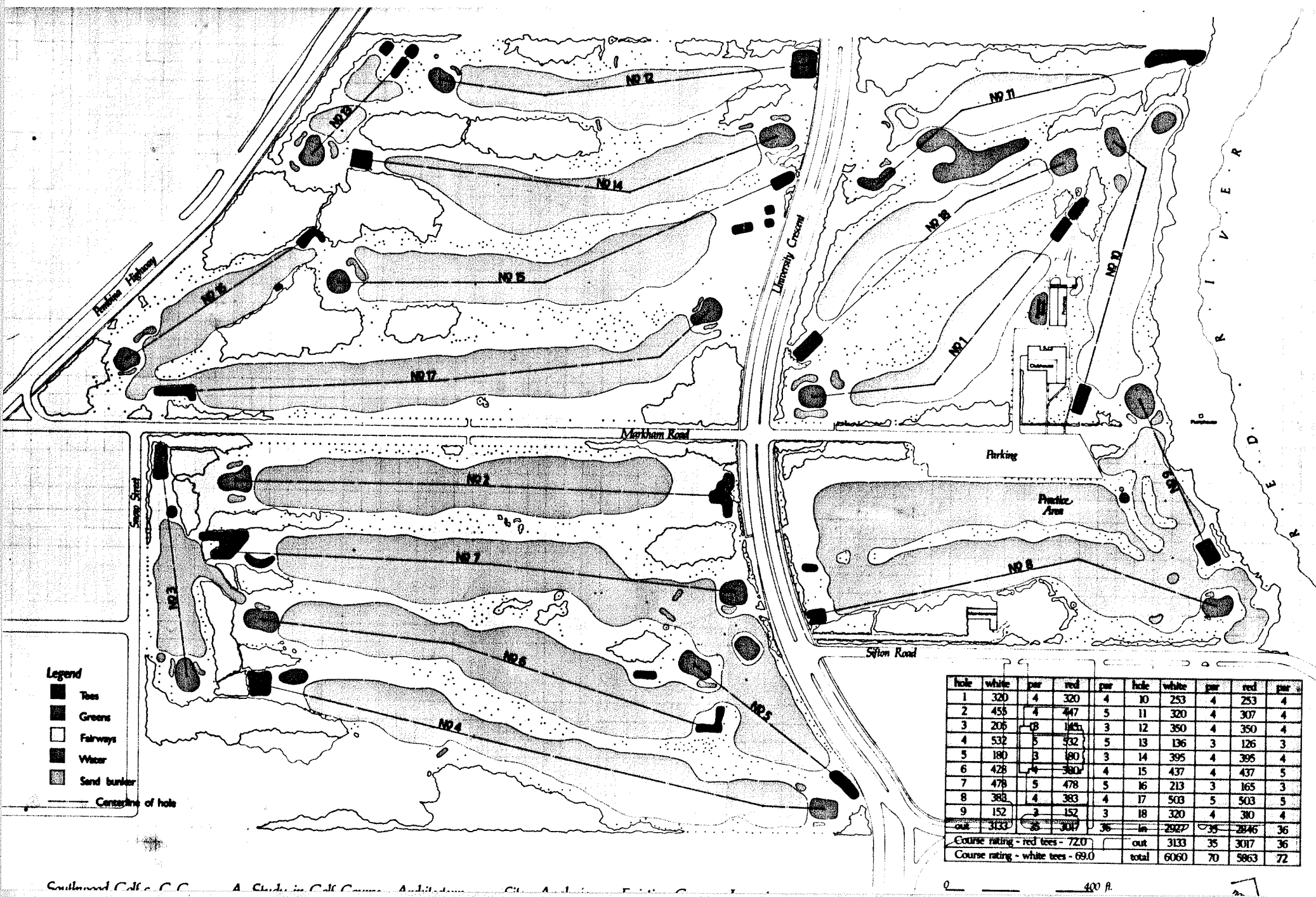
3. Maintenance.
   a. The greens, many of which have not been expanded or had their soil structure modified since inception of the course, are highly compacted because the present root zone mix and the insufficient usable cupset area (and total area) cannot accommodate the increase in traffic that has occurred over the past 60 years. An average of 4000 sq. ft. of usable cupset per green (6000 sq. ft. total area) is recommended. At Southwood, several greens have a total area of only 3000 sq. ft.
   b. Tees, like greens, lack sufficient area and root zone mix to handle the increase in traffic.
   c. Overall reduction in maintenance due to improved drainage, control of pedestrian circulation, establishment of proper maintenance zones, and the selection of appropriate cultivars and plant species.

Other issues and problems which should be addressed are:

1. Privacy. It is desirable to have visual privacy along all boundaries of the golf course. The addition of planting and physical barriers would provide visual privacy and would reduce pedestrian and vehicular access to the course.
2. Markham Road. The purchase of Markham Road from Snow Street to University Crescent would eliminate both the problem of calcium dust killing trees adjacent to the road and that of pedestrian and vehicular

movement through the golf course, and at the same time, would provide the necessary land for a drainage pond, which would offer new options and strategies in the design of the golf course.

3. Pedestrian crosswalks on University Crescent. Southwood has expressed the desire to have only two controlled crossing points on University Crescent. This alteration to the present system would necessitate reordering the sequence of holes 12 through 17.
4. Practice fairway. An improved practice facility should include a new tee area and practice green, new practice bunkers, and new chipping area. The design should also minimize the number of lost practice balls and reduce conflicts between the eighth hole, the parking lot, and the practice facility.
5. Restricted acreage. There is insufficient property on which to build new holes and/or complete construction and renovation projects without prolonged disruptions of play.



hole	white	par	red	par	hole	white	par	red	par
1	320	4	320	4	10	253	4	253	4
2	455	4	447	5	11	320	4	307	4
3	206	3	185	3	12	350	4	350	4
4	532	5	532	5	13	136	3	126	3
5	180	3	180	3	14	395	4	395	4
6	428	4	380	4	15	437	4	437	5
7	478	5	478	5	16	213	3	165	3
8	383	4	383	4	17	503	5	503	5
9	152	3	152	3	18	320	4	310	4
out	3133	35	3017	36	in	2927	35	2846	36
Course rating - red tees - 72.0					out	3133	35	3017	36
Course rating - white tees - 69.0					total	6060	70	5863	72

Master Plan (Fig. 6)

The Master Plan for Southwood Golf Course is based upon the concept of strategic design as evolved from an exploration of the functional and technological problems specific to the Southwood site. The concept of strategic design demands that the golf course should provide a test, not only of the technical skill of the golfer, but also of his intelligence and emotional control. To this end, it is necessary to achieve a balance of shot values within a hole as well as design balance from hole to hole. Equally necessary is the creation of a landscape of illusions, in which opposites merge: fantasy and reality, naturalness and artificiality, permanence and change, growth and decay, seclusion and sociability, practice and performance, metropolis and Arcadia.

Aesthetic, Function, and Technology

Site drainage is managed through a series of intermittent streams and ponds, which lead to a central reservoir and drainage channel. This type of water system is similar in principle to the movement of water in nature (e.g., first order, second order, and third order streams), but operates on a smaller scale, consistent with the site. The present location of topographic lows, unorganized site drainage, and organized site drainage by means of swales and french drains suggests the most logical route for the new water course. This manner of collecting surface runoff allows new design strategies to increase shot values at individual holes and, at the same time, enhances the aesthetic of the course through manipulation of the interface between the horticultural (turfgrass component) and the ecological (existing 'natural' systems).

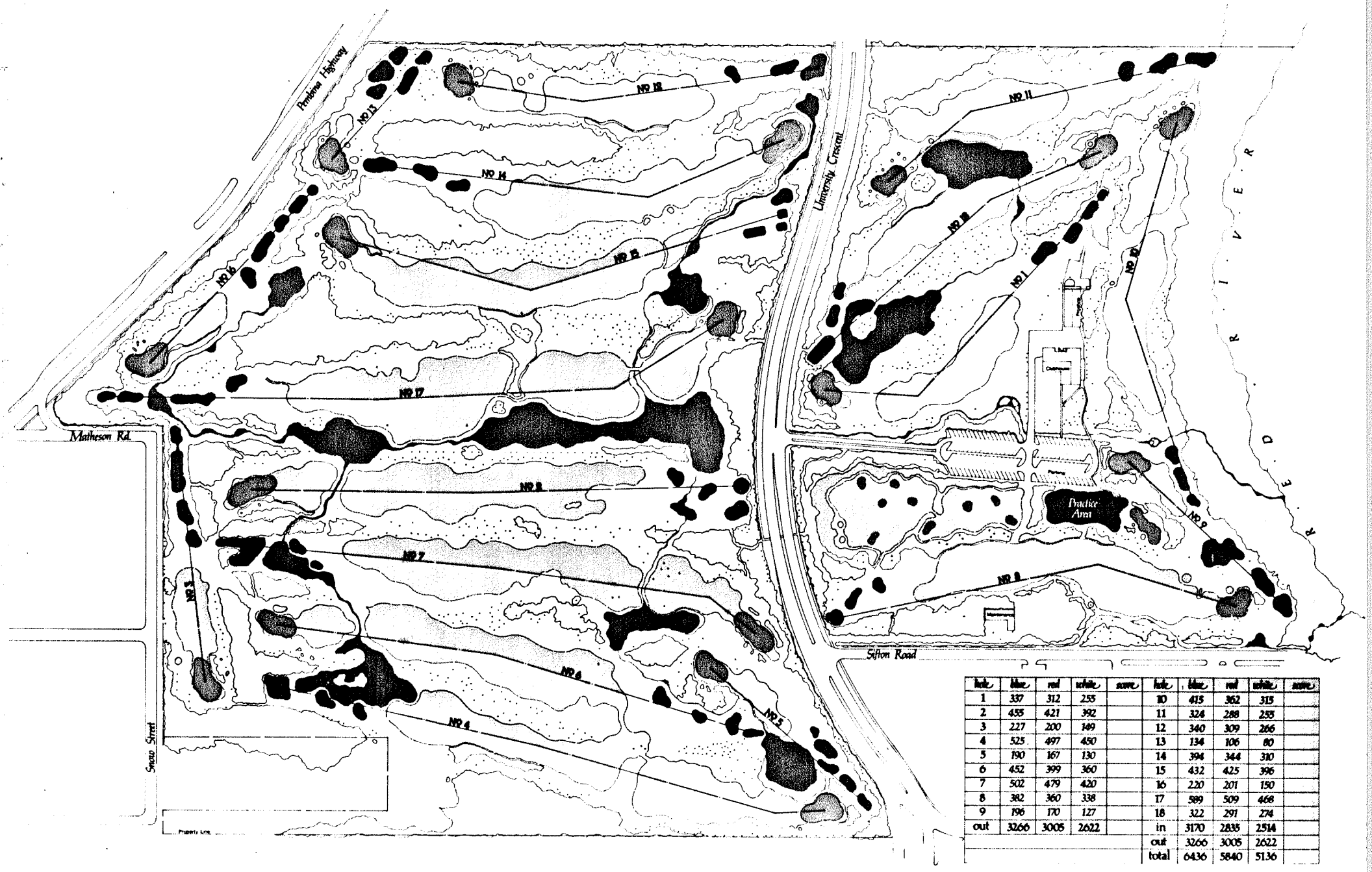
The new water course has the capacity to handle efficiently not only surface runoff, but also increased amounts of water from subsurface lines beneath new greens, tees, and bunkers. Their proximity to the new retention ponds, as well as the length and configuration of intermittent streams, will accommodate the expected increase in water volume.

Likewise, the restructuring of the soil profile and the eventual reconstruction of all greens and the expansion of the total and usable cupset areas of most greens will help to alleviate increased traffic.

A minimum of three tee-boxes may be utilized on each hole. The angle of play on tee-shots has been retained, so as not to diminish shot values. The reconstruction of all tees facilitates increased traffic, but at the same time minimizes the associated problem of soil compaction.

Reduction in maintenance is achieved by:

1. Control of pedestrian and vehicular circulation in areas of heavy traffic
2. An improved system of drainage allowing for surface runoff as well as internal (subsurface) drainage
3. A reduction in area (size) of high maintenance zones
4. The establishment of sound cultural systems for use in high and low maintenance zones



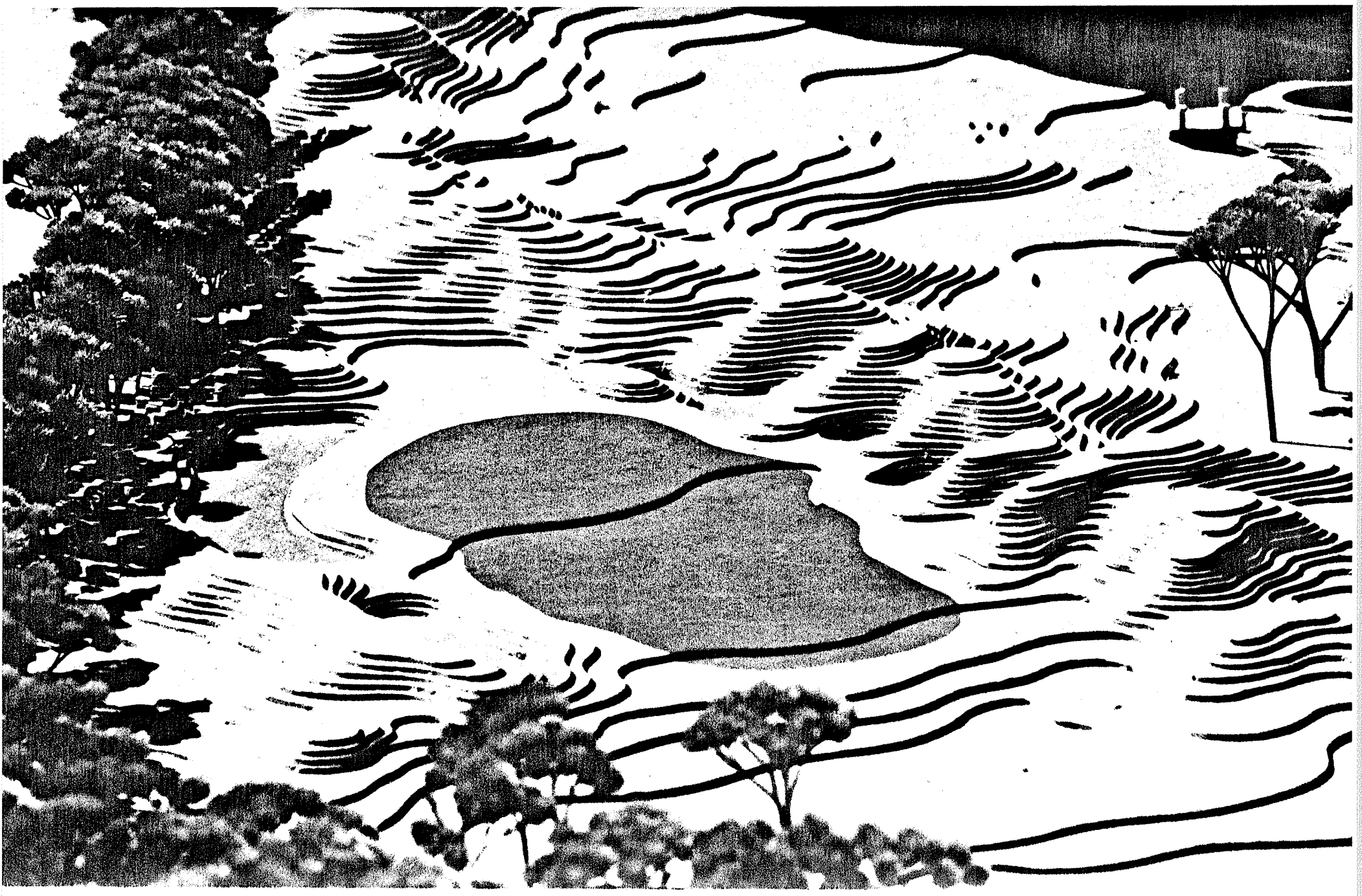
hole	blue	red	white	score	hole	blue	red	white	score
1	337	312	255		10	415	362	315	
2	455	421	392		11	324	288	253	
3	227	200	149		12	340	309	266	
4	525	497	450		13	134	106	80	
5	190	167	130		14	394	344	310	
6	452	399	360		15	432	425	396	
7	502	479	420		16	220	201	150	
8	382	360	338		17	589	509	468	
9	196	170	127		18	322	291	274	
out	3266	3005	2622		in	3170	2835	2514	
					out	3266	3005	2622	
					total	6436	5840	5136	

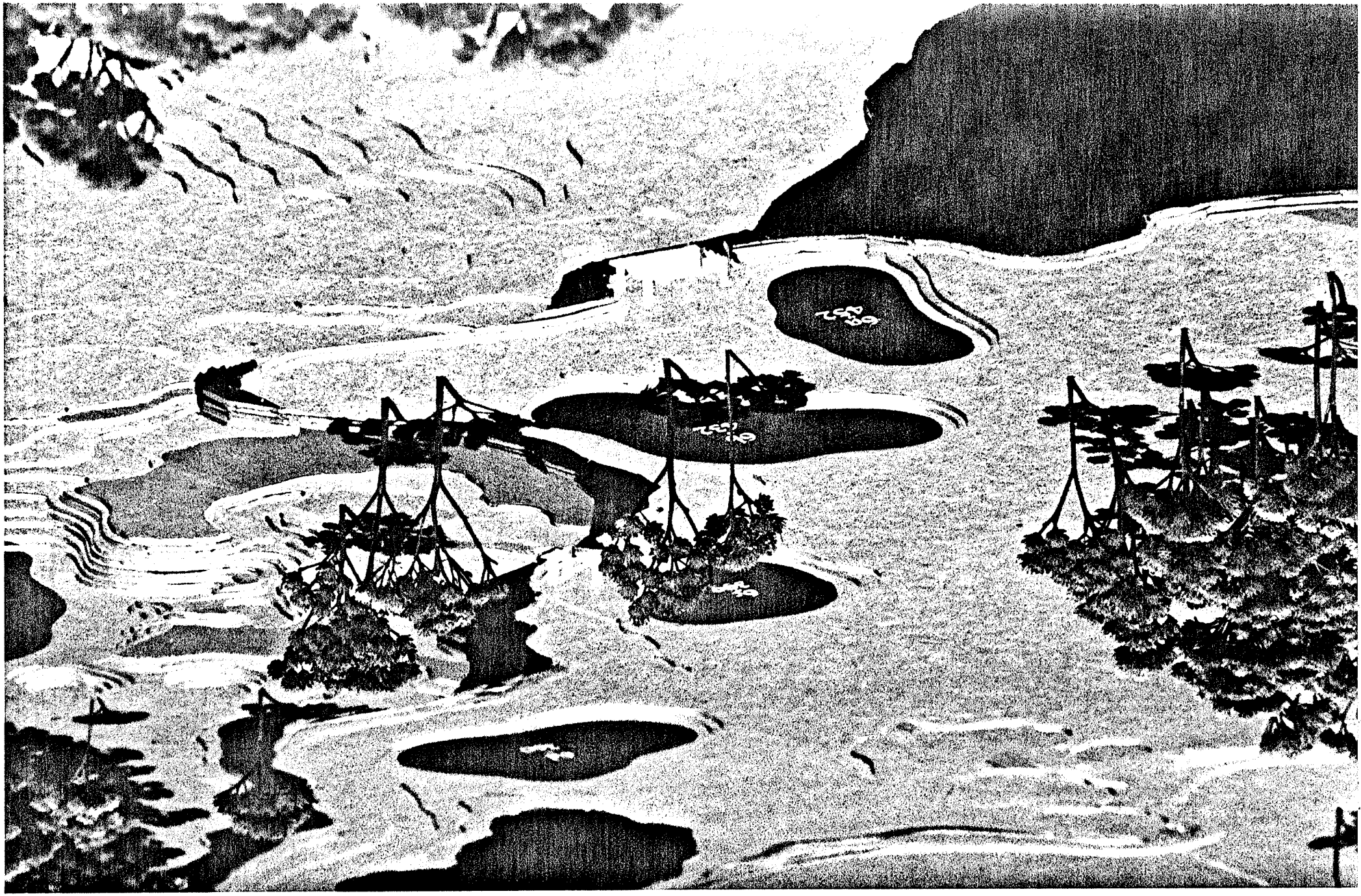
0 400 ft.

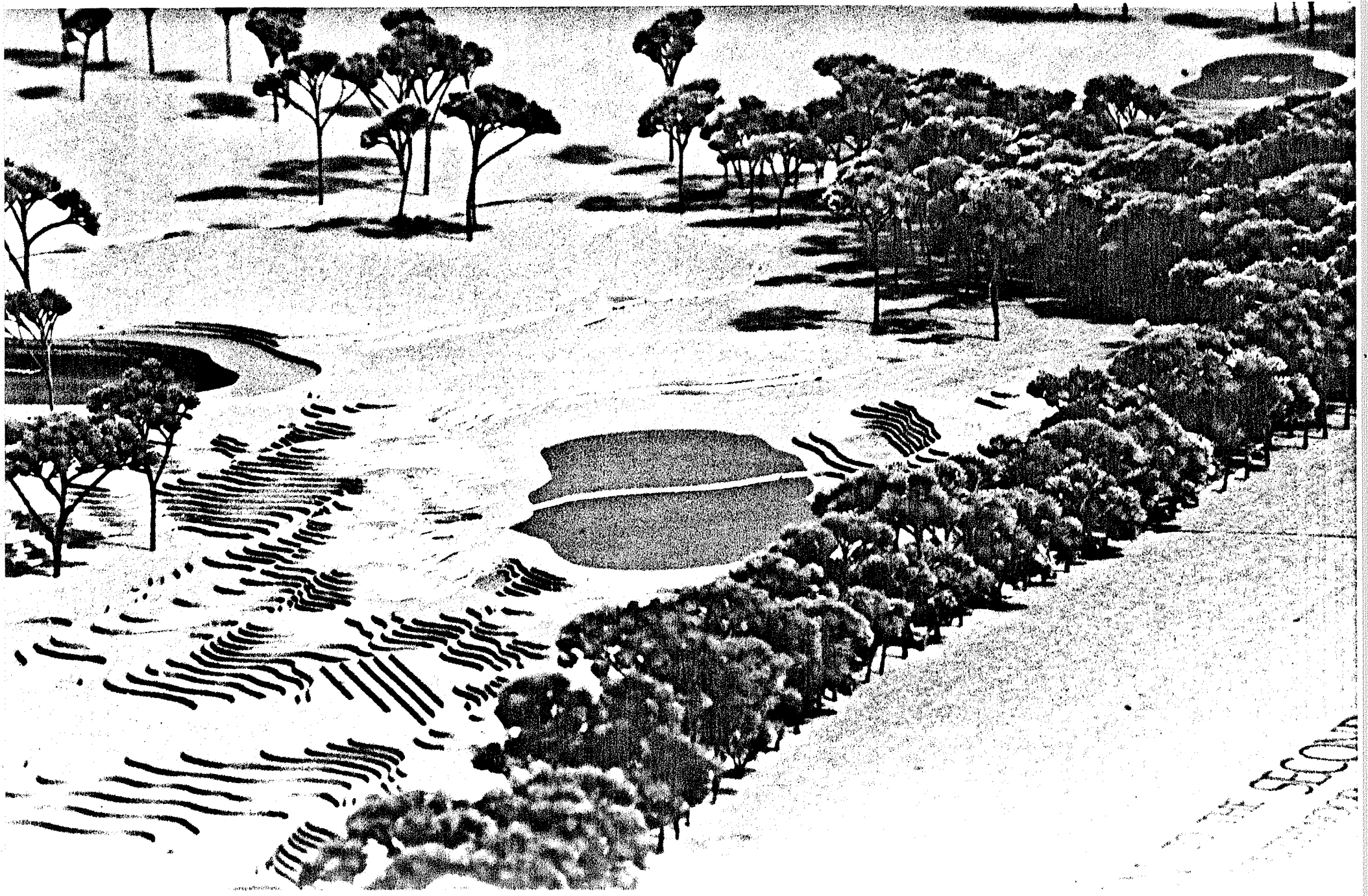
north

M · A · S · T · E · R ·· P · L · A · N

THE SECOND, FOURTH, FIFTH, SIXTH AND SEVENTH HOLES · · GRADING · ·







Appendix 1 - Guidelines for Turfgrass Components

General guidelines for the cultural systems involving the major elements of the golf course are summarized as follows:

1. Cultural system for a Bentgrass Putting Green

Mowing height: 0.19 to 0.31 in.

Mowing frequency: Daily.

Mowing pattern: Alter at each mowing in four directions.

Clippings: Remove.

Grain control: Use brush attachment as needed to control the growth of grain. Serious grain encroachments may require vertical cutting.

Fertilization

Nitrogen: Apply 0.3 to 0.7 lb. N/1000 sq. ft./carrier. Avoid nitrogen fertilization during times of heat stress.

Phosphorus: Apply at rate based on soil test.

Potassium: Apply at rate based on soil test.

Iron: Apply 1 to 2 oz. iron carrier/1000 sq. ft. where iron chlorosis symptoms appear.

pH correction: Maintain pH balance between 5.5 and 6.5.

Irrigation: Moisten to full depth of root zone with each irrigation; time prior to development of visible wilt symptoms.

Topdressing: Apply 0.1 to 0.4 cu. yd./1000 sq. ft. minimum as a follow-up to cultivation.

Cultivation: Utilize two to six times per year depending on traffic. Avoid cultivation during periods of heat stress.

Weed Control: Control broadleaf weeds in spring and fall as they appear.

Disease control: Practice a preventive fungicide program, usually in early fall.

Drainage: Use of a well-drained, coarse-textured root zone is essential for culture of healthy bentgrass greens subjected to intense traffic.

2. Cultural system for a Kentucky Bluegrass Tee

Mowing height: 0.5 to 1.0 in.

Mowing frequency: Three to five times per week.

Mowing pattern: Opposite mowing in each of two perpendicular directions.

Clippings: Return or remove.

Fertilization

Nitrogen: Apply 0.25 to 0.75 lb. N/1000 sq. ft./15-30 growing days.

Phosphorus: Apply just after coring at a rate based on a soil test.

Potassium: Apply at a rate based on a soil test.

Iron: Apply only where visual deficiency symptoms appear.

pH correction: Maintain pH between 6.0 and 7.0.

Irrigation: Each irrigation should moisten to full depth of root zone. Time prior to development of visible wilt symptoms.

Topdressing: Apply one to four times per year.

Cultivation: Core or slice as needed to counter soil compaction problems.

Weed control: Control broadleaf weeds as they appear.

Disease control: Practice a preventive fungicide program, usually in early fall.

Divot mark repair: Place soil-seed mixture in divot marks on daily to weekly basis.

3. Cultural system for a Kentucky Bluegrass Fairway

Mowing height: 0.7 to 1.2 in.

Mowing frequency: one to three times per week.

Mowing pattern: Mow longitudinally, with occasional cross mowing.

Clippings: Return.

Fertilization

Nitrogen: Apply 80 - 160 lbs. N/acre.

Phosphorus: Apply at rate based on soil test.

Potassium: Apply at rate based on soil test.

Iron: Apply as visual deficiency symptoms appear.

pH correction: Maintain pH between 6.0 and 7.0.

Irrigation: Moisten to full depth of root zone prior to appearance of visual wilt symptoms. Overwatering encourages *Poa annua* invasion.

Cultivation: Core as needed to correct soil compaction problems.

Weed control: Apply herbicides only when needed.

Disease control: Best accomplished by the selection of disease-resistant cultivars.

4. Cultural system for Primary Rough

Mowing height: 1.5 to 4.0 in.

Mowing frequency: Five- to fourteen-day interval, depending on level of irrigation.

Clippings: Return.

Fertilization (minimum levels once established)

Nitrogen: Apply up to 80 lbs. N/acre/yr. in preparation for tournaments.

Phosphorus: Apply up to 40 lbs. P O /acre/yr.

Potassium: Apply up to 40 lbs. K O/acre/yr.

pH correction: Usually not required unless pH is below 5.5.

Irrigation: Not required.

Cultivation: Not required unless soil compaction results from intense traffic.

Weed control: Apply herbicide as broadleaf weed problems develop.

Disease control: Not usually required.

Appendix 2 - Comparison of Areas in Existing and Master Plans

Existing Golf Course

Hole No.	Green (sq. ft.)	Tee (sq. ft.)	Fairway (sq. ft.)
1	3583	4450	78,900
2	5100	4300	158,600
3	4633	4100	45,500
4	3500	3600	174,350
5	4700	2650	67,600
6	4667	3742	181,900
7	4300	6500	184,550
8	4183	2950	167,400
9	5100	3100	43,100
10	3450	3400	96,500
11	3150	3500	63,400
12	3433	4600	98,500
13	4500	3300	21,900
14	4867	2400	131,500
15	3300	4350	138,000
16	3233	2100	59,500
17	4050	1993	174,900
18	5000	3100	66,500
Totals (sq. ft.)	74,649	63,685	1,951,600
(acres)	1.71	1.46	44.80
Averages (sq. ft.)	4147	3538	108,422

Practice fairway = 127,250 sq. ft. = 2.92 acres

Rebuilt Course According to the Master Plan

Hole No.	Green (sq. ft.)	Tee (sq. ft.)	Fairway (sq. ft.)
1	4950	5650	49,700
2	7000	5717	113,400
3	6300	7300	21,500
4	6517	6700	132,200
5	5500	6900	13,600
6	5650	5750	108,500
7	6125	8150	129,700
8	4850	4250	103,900
9	5350	7550	9,500
10	4900	7400	75,200
11	4850	7400	51,900
12	5350	7150	65,800
13	5225	9275	2,400
14	7150	7000	96,300
15	6383	4450	99,150
16	6400	8150	13,100
17	6000	7050	163,200
18	5067	5450	53,500
Totals (sq. ft.)	97,267	121,292	1,302,550
(acres)	2.23	2.78	29.90
Averages (sq. ft.)	5403	6738	72,364

Practice green = 4100 sq. ft.

Practice tee = 20,200 sq. ft. = 0.46 acres

Practice fairway = 72,400 sq. ft. = 1.66 acres

Bibliography

Anderson, Dave. "Monuments in Augusta's image." Golf Digest, May 1985, pp. 64-70.

Barkow, Al. "Course redesign: does it always make it better?" Golf Magazine, October 1977, pp. 48-53.

Bartlett, Mike. "Playoff city." Golf Magazine, June 1979, pp. 68-75.

Beaman, Deane. "The ultimate in links golf." Golf Magazine, July 1985, pp. 34-35.

Beard, James B. Turf management for golf courses. Minneapolis: Burgess, 1982.

Brooks, James H. "Fairways and green space in town planning." Landscape Architecture, October 1964, pp. 47-50.

Canadian Golf Superintendents Association. Proceedings of the Thirty-sixth Annual Canadian Turfgrass Conference and Show. Winnipeg, Manitoba, 1985.

Cobb, George W. "Augusta: National's Par Three course." Landscape Architecture, April 1964, pp. 190-192.

Cornish, Geoffrey S., and Ronald E. Whitten. The golf course. New York: Rutledge Press, 1981.

Diekelmann, John, and Robert Schuster. Natural landscaping. New York: McGraw-Hill, 1982.

Doak, Tom. "Tough to top." Golf Magazine, September 1985, pp. 33-45.

Doak, Tom, and colleagues. "The fifty greatest." Golf Magazine, September 1983, pp. 33-39.

Dobereiner, Peter. "In search of the good short Par Four." Golf Digest, April 1980, pp. 16-18.

------. "An annual venue girds for a modern test." Golf Digest, July 1981, pp. 48-51.

------. "The postage stamp that's tough to lick." Golf Digest, July 1982, pp. 76-77.

------. "Fear and loathing on the Seventeenth." Golf Digest, March 1985, pp. 54-58.

Dye, Alice. "Today's courses are too long." Golf Digest, May 1985, pp. 74-77.

Dye, Pete. "Hell for the players, heaven for the fans." Golf Digest, March 1982, pp. 78-84.

------. "Grrrrr!" Golf Magazine, October 1984, pp. 68-69.

Fazio, Tom. "Peace and quiet." Golf Magazine, November 1984, pp. 32-33.

Finger, Joseph S. "Designing courses to beat the water shortage." Golf Digest May 1981, pp. 56-59.

Golf Digest. "The golf course architect and the developer: how they work together." Special Florida Real Estate advertising supplement, September 1983, pp. 2-9.

Goodner, Ross. "Baltusrol: no tricks needed." Golf Digest, June 1980, pp. 58-61.

Graves, Robert Muir. "The view from the tee." Landscape Architecture, October 1964, pp. 43-44.

Green, Hubert. "A charm." Golf Magazine, April 1985, pp. 64-65.

Leahy, Patrick. "A fifth Open for Oakland Hills." Golf Magazine, June 1985, pp. 46-50.

Mamis, Robert. "A delicate balance: Sea Pines." Golf Directory, Winter/Spring 1981, pp. 18-23.

Mulvoy, Mark. "The ego buster." Golf Magazine, January 1982, pp. 82-93.

Netland, Dwayne. "The look of Scotland in Where? Orlando?" Golf Digest, September 1984, pp. 50-51.

Polakowski, Kenneth J. "Elements of golf course design." Landscape Architecture, October 1964, pp. 45-46.

Price, Charles. "Golf's great walks." Golf Magazine, February 1980, pp. 64-69.

------. "Evil greens." Golf Magazine, April 1980, pp. 54-59.

------. "That certain eye." Golf Magazine, May 1980, pp. 34-40.

------. "Host with the most." Golf Magazine, June 1980, pp. 56-61.

------. "Merion lies in wait." Golf Magazine, June 1981, pp. 74-80.

------. "Waking up to the course of my dreams." Golf Digest, August 1983, pp. 20-26.

Tarde, Jerry. "The unmasking of Merion." Golf Digest, June 1981, pp. 44-49.

------. "Architects Pete Dye and Jack Nicklaus." Golf Digest, October 1983, pp. 56-63.

Whitten, Ron. "New bunkers: back to the auld sod." Golf Digest, December 1984, pp. 72-75.

------. "Sibling rivalries." Golf Digest, July 1985, pp. 89-93.

------. "America's 100 greatest golf courses - 1985." Golf Digest, November 1985, pp. 26-41.

Wind, Herbert Warren. "A critique of course architecture." Golf Digest, November 1975, pp. 48-53.

------. "Pete Dye: improving on Mother Nature." Golf Digest, June 1978, pp. 128-149.

------. "My three ideal courses." Golf Digest, April 1980, pp. 72-85.

------. "Merion: home of historic moments." Golf Digest, May 1980, pp. 58-65.

------. "Let us now praise Amen Corner." Golf Digest, April 1984, pp. 54-59.

------. "The sporting scene: St. Andrew's and the British Open." The New Yorker, August 27, 1984, pp. 64-88.

------. "The sporting scene: an almost historic occasion." The New Yorker, July 22, 1985, pp. 55-63.

Zich, Arthur. "The pros go Hollywood." Golf Digest, August 1983, pp. 86-96.