April 20, 1967

To the Graduate Council:

I am submitting herewith a thesis written by Robert Gene Thress entitled "Planning and Designing for Recreation: Cruickshank Bend on Melton Hill Lake." I recommend that it be accepted for nine quarter hours of credit in partial fulfillment of the requirements for the degree of Master of Science, with a major in Horticulture.

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Graduate Studies and Research

PLANNING AND DESIGNING FOR RECREATION:
CRUICKSHANK BEND ON MELTON HILL LAKE

A Thesis

Presented to

the Graduate Council of

The University of Tennessee

In Partial Fulfillment

of the Requirements for the Degree

Master of Science

---

by

Robert Gene Thress

June 1967

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CHAPTER I

INTRODUCTION

In recent years much emphasis has been placed on the development of recreational facilities for utilization of leisure time by federal, state and local governments. The American citizen has expanded his demands for recreational activities from the two week vacation to the entire year. Non-working time has expanded until we now find it possible, and often desirable, to make use of some recreational facilities daily. Increases in disposable income, population growth, and mobility have emphasized the need for new, expanded, and well planned facilities.

Adequate planning for the rapid changes that have taken place has been difficult. Many efforts are now being made to correct existing deficiences and plan for the future. While planning alone will not eliminate mistakes and conflicts, it will reduce them to a much smaller magnitude than if no planning takes place at all. Thorough planning for the most effective utilization of land, space, and facilities is a prerequisite to the development of a successful recreation outlet (17).

Other features which must be incorporated into a successful recreational outlet include safety, comfort,

convenience, and pleasing appearance. All of these features help to determine the benefits and pleasures received by a user of the facilities, and the experiences that will be remembered after the visit. If a park, playground, or resort is designed and planned for the people, all types of people, then we may expect a maximum benefit to the people.

This thesis is concerned with the planning and design of a proposed park for Knox County on Melton Hill Lake, known as Cruickshank Bend. The major facilities were included after considering the standards and projected trends in recreation, and the desires of the people of Knox County as expressed by personnel of the Knox County Recreation Department, Metropolitan Planning Commission, and Tennessee Valley Authority.

CHAPTER II

REVIEW OF LITERATURE

A review of literature on parks and recreation in the United States unfolds a story of dynamic change and growth. Attitudes, values, facilities, and methods have all undergone adjustment and change which preceded the growth of today's multi-billion dollar business of recreational outlets (12). A glimpse into the past will indicate the extent of this transformation.

I. HISTORY

During the 1600's, all forms of amusement and misuse of time were forbidden by law in the Massachusetts Bay Colonies, due to the harsh actions of the Puritans (7). This extreme law was ignored by many of the people, bringing conflict but little punishment. This failure to obey, or enforce, the law indicates a change in the strict attitudes of the general public, and it was but a short time later that the Boston Commons was established as the first city park (7).

Freedom in recreation was expanded during the 1700's and rapid changes were taking place in available facilities, leisure time, and economic prosperity. An emphasis on labor

began to give way to an emphasis on leisure (7). This is not to say there was no opposition, for as Brockman (3) quotes from the Methodist Discipline of 1792,

> The student shall be indulged with nothing which the world calls play. Let this rule be observed with the strictest nicety; for those who play when they are young, will play when they are old.

This growth in recreation continued during the 1800's and indicates the almost complete change in attitudes. Spectator sports, theatres, and the more active types of recreation were in demand for more people. Notable expansions include mountain resorts; the establishment of the Yosemite Grant, later to be known as Yellowstone National Park; the establishment of Central Park in New York; increased number of areas for active play and playgrounds; the development, in some cities, of complete family facilities to serve men, women, and children (7, 10).

With the turn of the century came the founding of the Camp Fire Girls and Boy Scouts of America, which led to further escalation of recreational developments and the establishment of organized recreational programs in 336 cities. During this period of growth came the automobile and radio, which rather than conflict with the other leisure activities, actually stimulated and worked in conjunction with various recreational pursuits in providing pleasure to the population. This was an adjustment period in which the

old concept of simple functional services gave way to the complex functions of the new needs and demands (7). Tremendous social and cultural changes stimulated the active, rather than the passive, expenditure of leisure time (10).

Our depression years were boom years for outdoor recreation (10). Through C.C.C., P.W.A., and W.P.A., much needed outdoor recreation facilities were constructed and brought to communities which had not previously experienced organized programs. With little available money, people used their spare time on activities which required no fees or expenses (7).

World War II had both a positive and negative effect on recreation (10). A shortage of manpower and materials curtailed the development of facilities, and travel was reduced by shortages of gasoline and tires. An immediate need for neighborhood and municipal parks was indicated, while pointing to the need of recreational areas in general (7).

The situation had changed to some extent by 1950. Approximately 2000 municipalities employed 58,000 leaders, 7,000 full time, and spent $269 million for parks and recreation (7). Our modern standards for adequate financial support of a park and recreation program is $5-6 per capita per year, exclusive of capital improvement and acquisition

(10). This is quite impressive when compared with the conditions of the 1600's and 1700's (7).

This growth on a national scale may be better understood by focusing on one of the county programs and its growth, such as Knox County in Tennessee.

Knox County's park and recreation department has had a relatively short period of growth when compared to the nation as a whole, or even Tennessee. Under the name of Fountain City Improvement Company, a park and recreation program was begun in 1895. The growth was slow, but parks were established and used. The first major development for this organization was Concord Park on Fort Loudoun Lake. The land was transferred to Knox County by Tennessee Valley Authority in 1949, and was part of a group of 19 sites which T.V.A. transferred to Knox County for public recreation. The Knox County Recreation Department was established in 1958 and has become one of the leading and most rapidly progressing county departments in the South (27).

This recreation department now controls about 1255 acres, the majority of which is along Fort Loudoun Lake. There are 14 playgrounds with supervised recreation for 8 weeks each Summer. The parks and playgrounds vary widely in the features included for different activities. One of the Knox County parks, Concord, is the most visited area in East

Tennessee except for the Great Smoky Mountains National Park (27).

II. TRENDS AND PROJECTIONS

The brief history and summary of developments in recreation and parks gives a basis on which to study the present and future recreational development needs. By comparing past, present, and future uses, expenses, and trends in recreation, we may more readily plan and develop useful areas for the people. Tables I, II, and III indicate trends and projections for various elements related to the recreational field. The tables reveal rapid growth and expansion in recreation, and help one to realize the definite need for further development of facilities. As population doubles, the recreational demand will triple by the year 2000. Between 1952 and 1962 the population increased 19 per cent, the visits to state parks increased 113 per cent, and the visits to national parks increased 87 per cent. This example fully expresses the need for areas designed and planned for maximum recreational usage (12).

More people are seeking outlets to relieve the stress and strain of our modern complex world. Young people need these outlets to develop physically, mentally, and spiritually; young and middle-aged adults need outlets to relieve the tensions of this competitive and industrialized urban

TABLE I

NATIONAL TRENDS AND PROJECTIONS RELATING TO RECREATION

Item	1850	1900	1950	1957	1960	1964	1976	2000
Activities								
Driving for Pleasure					872		1341	2215
Swimming					672		1182	2307
Walking and Hiking					566		856	1569
Outdoor Games and Sports					424		825	1666
Sight Seeing					282		456	825
Work Time and Income								
Population*						181	230	350
Hours per Work Week	69.8	60.2			39.7		36.0	32.0
Per Cent Income Over $10,000					10		40	60
Disposable Income**					$354		$706	$1437

TABLE I (continued)

Item	1850	1900	1950	1957	1960	1964	1976	2000
Parks								
Number of County Parks			933		2610			
Expenditures for County Parks				$67		$125		
Attendance at National Parks*			33.3	59.3				

*Millions

**Billions

Sources: National Association of Counties. 1964. County Parks and Recreation - A Basis for Action. National Recreation Assoc., New York, N. Y.; and M. M. Regreen and H. H. Wooten. 1963. Land Use Trends and Organization. U.S.D.A. Yearbook of Agriculture 1963, pp. 59-63.

TABLE II

TENNESSEE TRENDS AND PROJECTIONS
RELATING TO RECREATION

Item	1949	1952	1960	1964	1966	1976
Population*			3.57			3.94
Per Capita Income	$925			$1852	$2199	
State Park Attendance*		2.28	3.86		6.10	
Investments for Recreation on T.V.A. Shorelines*			$120		$192	
Visitors to All T.V.A. Reservoirs*			42.5			

*Millions

Sources: Tennessee Valley Authority. 1961. Outdoor Recreation for a Growing Nation. Knoxville, Tenn.; U.S.D.A., Forest Service. 1965. The American Outdoors. Misc. Pub. No. 1000. U. S. Govt. Print. Off., Washington, D. C.

TABLE III

KNOX COUNTY TRENDS AND PROJECTIONS RELATING TO RECREATION

Item	1949	1960	1964	1965	1966	1980
Population*			250		282	325
Park Acreage					1255	3000
Park Attendance*			277	292		
Annual Budget of Parks*			$ 99	$108	$128	
Fort Loudoun Lake Facilities and Activities						
Value of Facilities	$1,367,400	$3,514,150				
Number of Boats	778	1,707				
Value of Boats	$ 843,050	$1,550,700				
Public Access Areas	0	70				
Person Day Use	511,000	1,159,200				
Group Camp Capacity	0	100				

*Thousands

Sources: Tennessee State Planning Commission. 1960. Melton Hill Reservoir - Comprehensive Plan for Land Use Development. Pub. No. 310. Nashville, Tenn.; and W. P. Wilson. 1964. Recreation Outlook. Knox County Recreation Dept. and Metro. Planning Comm., Knoxville, Tenn.

environment; our senior citizens need to find meaning and purpose in their retirement years (12). One of the greatest antidotes for asocial behavior, mental depression, and poor physical health is a sound park and recreation program (7).

The Federal government has accepted some of the responsibility of providing recreational facilities for its citizens since the establishment of Yellowstone National Park in 1872 (7). Local governments provide public parks and recreational programs varying in diversity and adequacy, but few, if any, completely meet the demand (18).

Relative to present demands and future needs, there are a number of factors to be considered in recreational developments. All land is not equal in terms of usage for recreation, just as it is not equal for crops (12). Effective recreational land must be readily accessible, and within a reasonable distance of a large portion of the population; the land must meet the needs of the desired facilities; with the present trends toward water oriented activities, the junction of land and water has become highly important and desirable for recreation; the plan for development must include features which will add to the safety of the users and to the preservation and protection of the park (17, 20).

III. FACILITIES

The features and facilities of a park or recreation area will vary with location and size. National parks will have different needs and provide different facilities than a community or county park. Planners and designers must decide what facilities are desired, necessary, and feasible for a particular area (17). Activities or facilities which conflict must be planned for in advance, and thereby reduce or remove the problem (20). Areas may be defined in order to prevent hunting and picnicking in the same space; the same would be true of swimming and boating. Nature will not tolerate two objects seeking to occupy the same space at the same time, and the same is true with recreational activities (5).

Some of the facilities, equipment, and activities which may be found in recreational areas include swimming, boating, hiking, fishing, picnicking, hunting, bicycling, minature golf, camping, tennis, scenic overlooks, and active play areas (6). The number and types of facilities within a recreational area will be determined by public demand, cost, suitability of the land, and other factors governing the development of such an area.

IV. PLANNING

The arrangement of the facilities in such a way that natural and man-made features blend, is the responsibility of the planner and designer. Factors of economy, safety, comfort, convenience, and maintenance must be considered, while seeking the most pleasant utilization of the available space (6). This planning has a direct bearing on the experiences of the user, and often means the difference between the visit being pleasant or unpleasant (3). It has been said that an outing should provide five separate opportunities for enjoyment by the participant. The sequence of opportunity is planning and anticipation; the journey to the site; the experiences that occur during the visit; the homeward trip; and the opportunity for enjoyment in recollection of the outing.

There is a notable lack of standards dealing with recreational areas, because little basic work has been done (17). The information in Table IV has been used by some agencies, with no two agencies using the same data. These generalized standards give some basis for judgement and have been helpful in preparing this thesis.

TABLE IV

GENERALIZED STANDARDS FOR RECREATION

Features	Norms
Land	
Regional Park	500+ Acres
County Park	100-500 Acres
Community Park	20-100 Acres
Nature Park	25+ Acres
Public Access Areas	15 Acres
Marina	1- 10 Acres
Facilities	
Swimming-Public Pool	2800-4500 Sq. Ft.
	7 people/100 Sq. Ft. water surface (shallow).
	4 people/100 Sq. Ft. water surface (deep).
	1 person/100 Sq. Ft. sun deck area.
	2/3 of the people out of the pool at a given time.
Boating - Launch Ramp	10 per cent desirable grade.
Camping	5-20 families/area is good.
	50-100 families/ area is best.
	Fees - $1.00/night, $4.00/week.
	750 Sq. Ft./ camper.
	1200 Sq. Ft./ trailer space.

TABLE IV (continued)

Features	Norms
Picnicking	225 Sq. Ft./table (8 people).
	10.5 table/acre.
	1 grill/5.1 tables.
	1 trash can/4.2 tables.
	1 water outlet/30 tables.
Water Supply	3.1 gal./day/person picnicking.
	5.5 gal./day/person camping.
	18.4 gal./day/person in cabin.
	15.0 gal./day/person in organized camp.
	200-250 Ft. maximum distance.
Sanitary Facilities	4 stools/25 camp sites.
	300-400 Ft. maximum distance.
Wash House	1500 Ft. maximum distance.
Parking	150/cars/acre - 300 Sq. Ft./car.
	1 stall/4.7 picnic tables.
	4 people/car average.

Sources: G. S. Brown, 1965. Picnic Facilities. Management Aids Bulletin No. 5. American Inst. of Park Exec., Wheeling, W. Va.; G. D. Butler. 1947. Recreational Areas--Their Design and Equipment. A. S. Barnes and Co., Minneapolis, Minn.; C. C. Ronfold. 1964. Guidelines for Campground Development. Management Aids Bulletin No. 34. American Inst. of Park Exec., Wheeling, W. Va.; and Tennessee State Planning Commission. 1960. Melton Hill Reservoir - Comprehensive Plan for Land Use Development. Pub. No. 310. Nashville, Tenn.

CHAPTER III

MATERIALS AND METHODS

I. THE LAND

Among a number of possible park sites studied to serve as a basis for this thesis, one in the northwestern portion of Knox County seemed to have the most likely possibilities. It is large enough, having 112 acres of level to rolling land. It provides excellent sites for camping areas, including trailer and tent spaces, and motel space with beautiful views for less active visitors. It varies in height from 790 foot elevation at the lake to 940 feet, so providing a fine variety of views, and good hiking and riding trails. The lake front sites are usable for boat launching, a marina, fishing, and water skiing. The open land offers sufficient space for such active games as basketball, football, baseball, and even golf putting or chip shot greens. Numerous rock outcrops will serve as area separations, and elevations for views across the proposed park. About 20 per cent of the area is covered with trees and small shrubs. This forested area can be utilized for foot paths, camp grounds, and picnic areas.

II. REASONS WHY CHOSEN

Selection of this site on Cruickshank Bend for a Knox County Park was made after a careful consideration of the following factors.

Needs

This western section of Knox County has no large public parks, although growth of the area has been rapid in terms of population. At the present time, all of Knox County's park acreage is along Fort Loudoun Lake (17, 27).

Access

Cruickshank Bend lies in a triangle formed by Interstate 40 and Interstate 75, and has adequate entrances from these highways by way of Lovell Rd. or Campbell Station Rd., Hardin Valley Rd., Steele Rd., and Williams Bend Rd. (Figure 1). All of these roads are hard surface and in a good state of repair, but are quite narrow for the expected flow of traffic. Distance to Knoxville is 18 miles. Suburban developments are only 4 to 5 miles away. There is no public transportation to the park site, or within reasonable walking distance, at the present time (17).

Conflicts or Complimentary Developments of Adjoining Areas

The Knox County side of Melton Hill Lake is in agricultural use, with some residential development. The

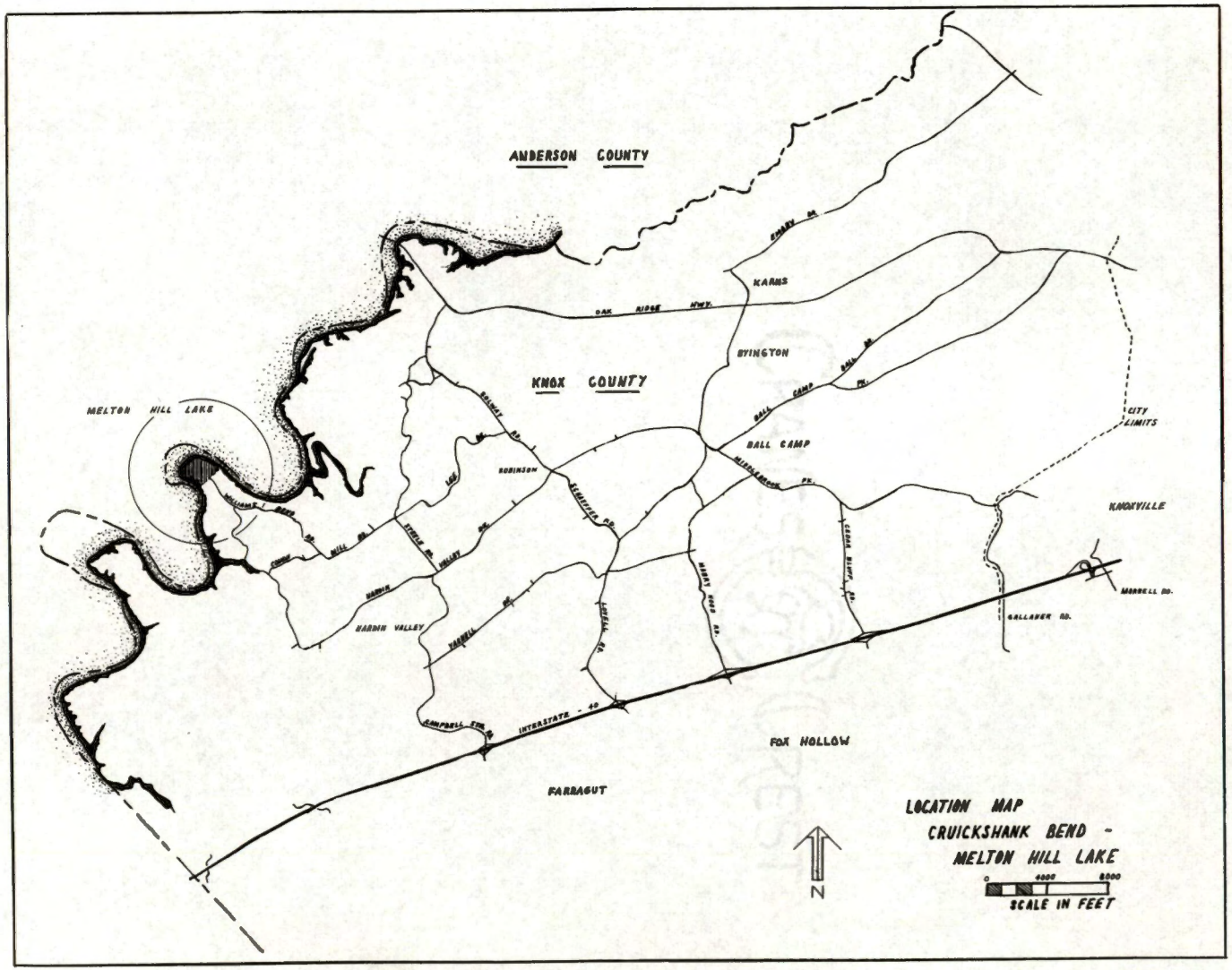

FIGURE 1
LOCATION MAP

Anderson County side of the lake is owned by the Atomic Energy Commission, at this point, and consists of tree covered hillsides and farmland, and may be expected to have stable land use (17).

Availability of Land

This land was acquired by the Tennessee Valley Authority while planning for the construction of Melton Hill Dam. It has since been transferred to Knox County for the purpose of public recreation (17).

Recreational Potential

Variation in topography, nearness to a large body of water, excellent scenic attractions, and a vareity of specific site characteristics help to provide the recreational potential of Cruickshank Bend.

Higher elevations make exceptional sites for overlooks, or other facilities from which the attractive surroundings may be enjoyed. Lower elevations are suitable for active recreation such as baseball, football, playground apparatus, and putting greens. Approximately 50 per cent of the land is level to gently rolling. Several areas of irregular land features provide potential hiking trails with a challenge.

Water oriented recreational activities may be expected to receive heavy usage. Melton Hill Reservoir

extends 44 miles upstream from the dam and is navigable for 38 miles. Locks in the dam allow passage of boats into additional miles of waterways. There are 140 miles of shoreline when the lake is at an elevation of 795 feet, with 5720 acres of water surface. At elevation 790, the shoreline is 90 miles with 4680 acres of water surface. This lake is relatively narrow at Cruickshank Bend in comparison to other T.V.A. lakes, and shoreline development must be planned so as to allow ample space for barge traffic to maneuver the sharp bends (Figure 2). Water in Melton Hill Lake is clean in comparison to Fort Loudoun Lake, and has very little fluctuation of water level. The gradual slope of the major portions of shoreline provides excellent sites for water skiing, and boat launching ramps.

Scenic values of this park site are extremely important, and contribute a great deal to the development plan. Views of the Cumberland Mountains, bluffs, surrounding hills, and the lake may be enjoyed from many locations. There are two ponds on the land, one is approximately 3/4 acre and has an attractive setting; the other is smaller and seems to have less appeal or usefulness. Rock outcroppings add interest to the land features of the site, especially in the wooded section to the west. These tree covered areas add to the scenic attractions of the site, both from their

FIGURE 2

AERIAL PHOTOGRAPH OF CRUICKSHANK BEND

individual beauty and from the pleasant settings they provide for viewing other features.

Selection of specific sites for the various recreational facilities was made after consideration of the needs of the facility and its relationship to other facilities. Views, vegetative cover, topography, and other natural features were utilized, with a minimum of destruction to the existing features.

III. PLANNING AND DESIGN PROCEDURES

Sources of Information on What Should Appear in the Park

Knox County Park and Recreation Department personnel have indicated the need for inclusion of features and facilities listed in Table V. These same elements were considered desirable for parks by Brockman (3) and Reid (15), and were studied for feasibility through plot and contour maps, and on the spot inspection. Other sources of information on recreational features were the Tennessee Valley Authority, and the Department of Horticulture, University of Tennessee.

Planning Park Content and Utilization of Existing Situations

Various arrangements of park facilities and features were attempted in order to discover the most effective utilization of natural features, and the best combination of

TABLE V

PROPOSED PARK FACILITIES AND ACTIVITIES

Facility	Size
Swimming Pool	18,000 Sq. Ft. water surface (570 customers, 190 swimmers)
Lodge	40 units, 200 Sq. Ft. each
Camp Sites	42, 1500 Sq. Ft. each
Picnic Tables	115, 300 Sq. Ft. each
Boat Dock	60, boat slips
Shelters	4
Sanitary Facilities	6 (additional space in concession)
Wash House	1 (camp site area)
Concession Stand	1800 Sq. Ft. (at Tower)
Tennis Courts	3
Launching Ramps	2 (existing)
Nature Trails	2, approximately 2.5 miles
Playfield and Equipment	baseball, football, putting greens apparatus
Water Skiing	
Fishing Pads	16
Parking	655 cars, 300 Sq. Ft. each

uses; while providing the most comfortable and attractive situation for the user.

Land requirements, both as to size and degree of slope, were studied in relation to the needs and the available sites for each structure or facility. Scenic attractions were preserved, while using the sites to best advantage. Wooded areas were preserved and utilized for picnicking, camping, and nature trails. Large open meadows were designated for active play, putting greens, and parking. Special consideration was given to views presented from the overlooks and lodge, while attempting to design them for suitability to the site. An existing silo was utilized for an overlook tower, and offers exciting views of the surrounding areas.

Shoreline activities include boating, fishing, and water skiing, for which facilities have been planned; but since these people also wish to picnic, facilities have been planned along the shoreline for their use.

Plant materials for the park were planned and selected, as to specie, for their characteristics of color, form, tolerance as to growing conditions, low maintenance requirements, and general attractiveness. Small plants were suggested for mass planting because of lower initial cost, ease of planting, and their ability to survive transplanting. These plantings help to provide pleasant, attractive

settings for the various facilities, while screening undesirable views and serving as background or framing in other situations. Special consideration was given to unusually wet or dry ecological situations, with plant selection being made on this basis. Many of the plants in the design are similar to those existing on the site.

Planning the Organization of Park Content

After determining the space requirements and special needs of the facilities and features, a plan for space organization was made. Safety, efficient traffic movement, economy, and maintenance were governing factors in planning this space organization.

Different facilities were tried on various sites, and the road system was laid out to meet the needs of the new arrangement, until a finalized plan was selected which appeared to satisfy the needs for the park. The roadways connect recreational units, they provide separations for various uses of land, and they serve to guide the person's vision toward more desirable views. One way roads were planned from the main entrance to the lodge area and to the camp grounds, for the purpose of safety, comfort in driving, guiding the vision, and for more efficient traffic movement. Two way roads were planned for direct access to the swimming pool, tower overlook, picnic areas, boat dock, and active

play area which is expected to receive the most use. These roads are wider, laid out on contours, and will safely carry the heavy volume of traffic expected. Parking has been planned at each facility according to the expected demand.

Overnight accommodations were given special consideration, both the camp sites and lodge, because of their special needs, and were separated to some extent from other park facilities. Views, shade, topography, and adequate space were elements of great importance in determining location of these overnight facilities.

The swimming pool was located in a central position because of the expected heavy use. The site of a small pond was utilized for the swimming pool to reduce grading, and for the pleasant surroundings adjacent to the site. This site is also close to the proposed location of the lodge for convenience.

Picnic areas were located within, or adjacent to, wooded areas for comfort, and close to many of the active play areas and activities for convenience.

The boat dock was planned in the most sheltered cove available, for protection from storms. Gas pumps at the dock serve all of the boats, and are conveniently close to the adjacent launching ramp.

Putting greens and the major active play area make

excellent use of relatively level land, while preserving unobstructed views from other parts of the park.

Sanitary facilities, shelters, and water outlets are planned within a short walking distance from all activities, with electric outlets and lights being located in areas in which night use is encouraged.

Tree patterns and shrub masses help to outline large open spaces, which serve as buffer zones between different activities, and provide a feeling of flow and spaciousness. Species of plants are arranged to provide a repetition of color, form, and other characteristics for continuity throughout the park.

Tests of Utility

Usefulness of the planning and design for this park has been tested through discussions with personnel of Knox County Park and Recreation Department, and Tennessee Valley Authority. Standards used for many of the facilities have been used by other agencies with success, but few records are available for comparisons.

Presentation

The presentation of a development plan must indicate both existing and planned features for the site. Figure 1 (page 19) is a location map identifying the site and its position relative to Knoxville. Figure 2 (page 22) is an

aerial photograph of the park site and surrounding areas, showing much of the existing conditions. The general layout (Figure 3) of the park plan indicates the organization of the site into areas for specific activities, the road system, buildings and recreational structures, utilities, plant materials, and contours.

Figures 4, 5, 6, and 7 are quadrant drawings of the park plan, at a larger scale, which better illustrates the details planned. Each of the quadrants shows approximately 25 per cent of the site, and indicates more accurately the size of the facilities and planned features, more exact site locations, and identification of plants. Table VI is a plant list indicating the number of plants to be used in the design, the Latin name, common name, plant size, an indication as to whether the plant is to be balled and burlapped or bare root, spacing between plants, and an estimated cost based on trade publications in April, 1967. This plant list, along with the quadrant drawings provide the necessary information for landscape plantings.

Figure 8 provides a conception of some of the structures planned for the park. The materials suggested for use in construction are field stone and redwood, which will help to reduce maintenance costs, blend with the surroundings, and present a pleasing appearance. The sketch of the lodge illustrates the utilization of irregular land forms to

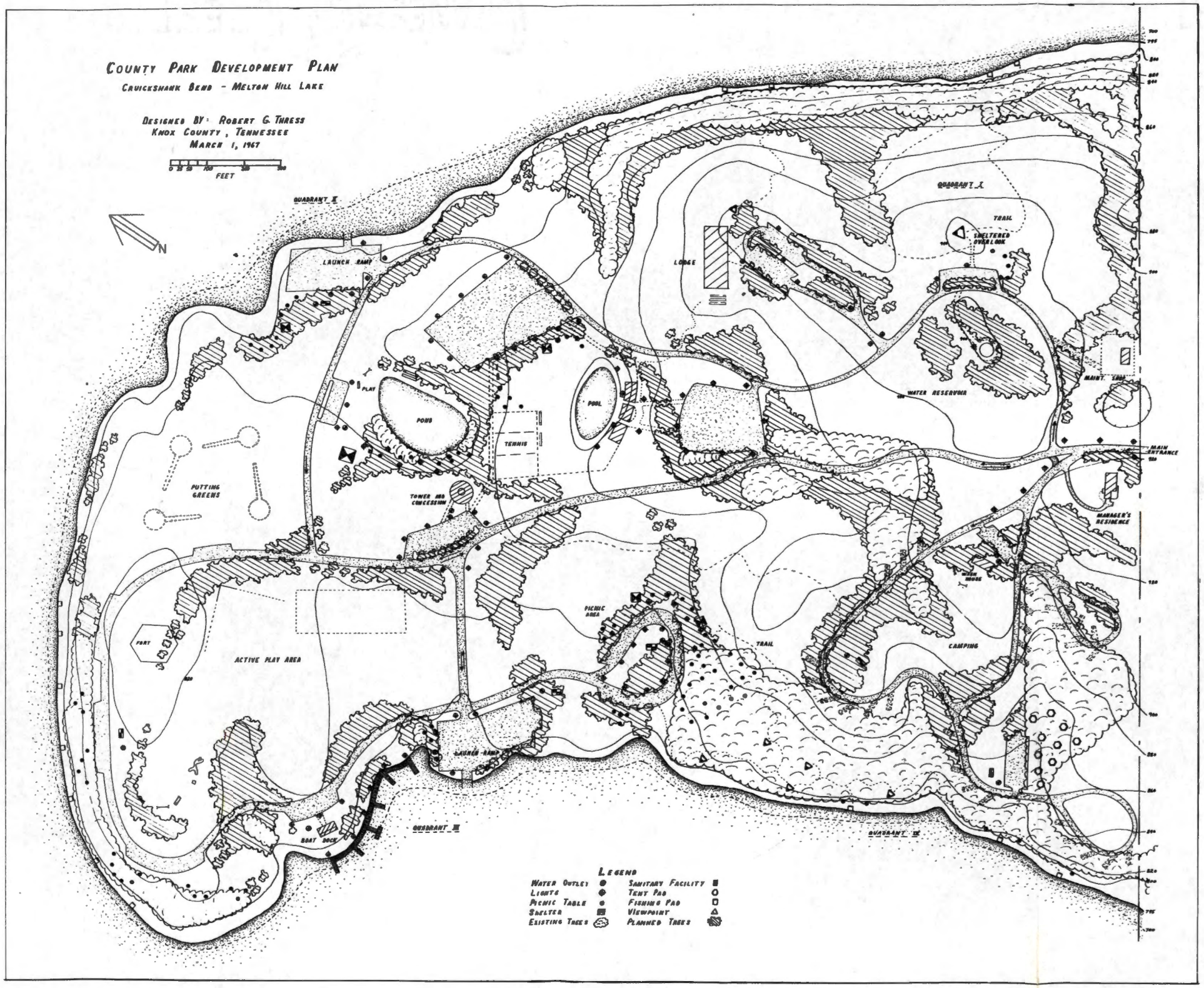

FIGURE 3

GENERAL LAYOUT AND DESIGN

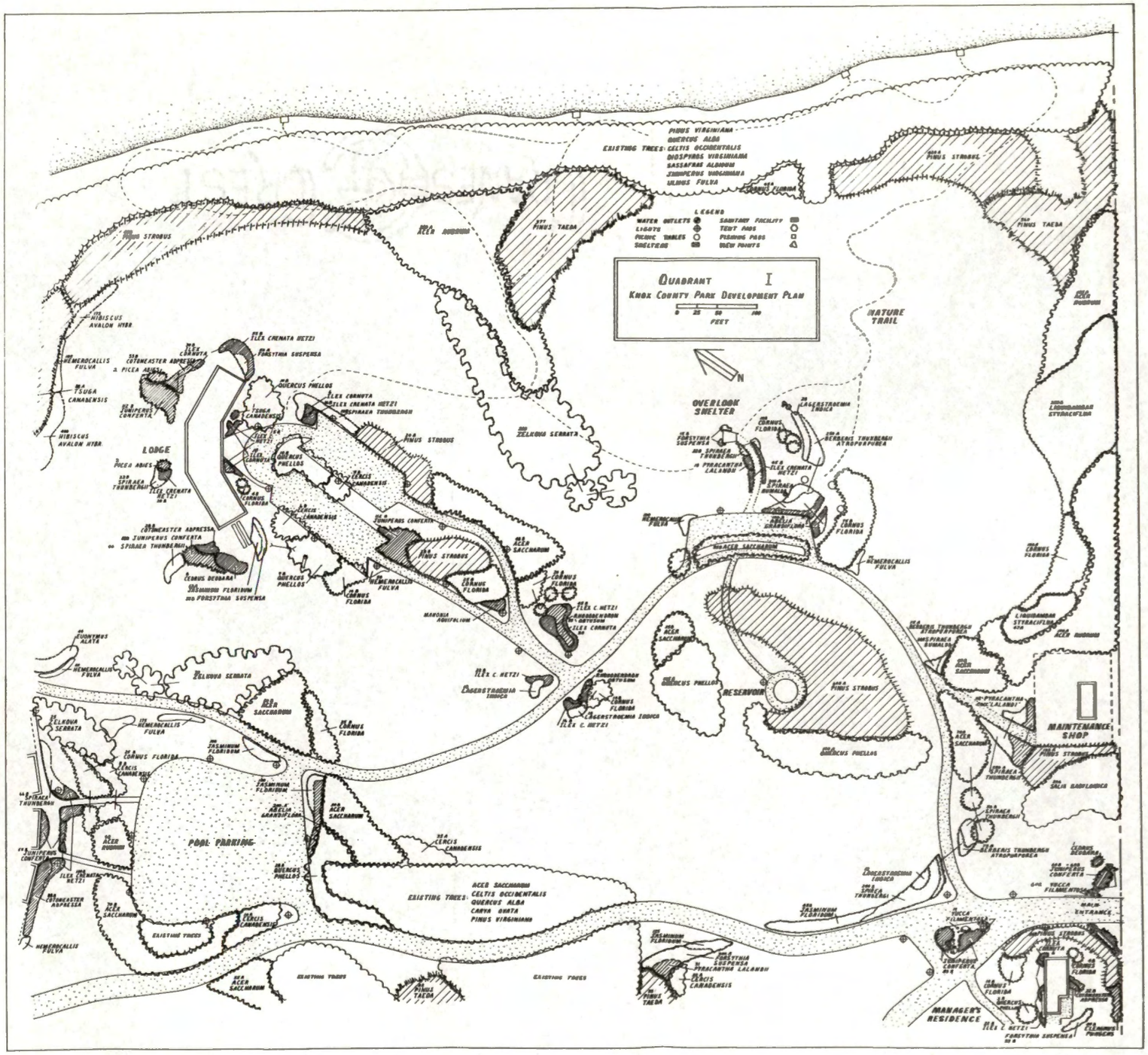

FIGURE 4

DESIGN OF QUADRANT I - SE

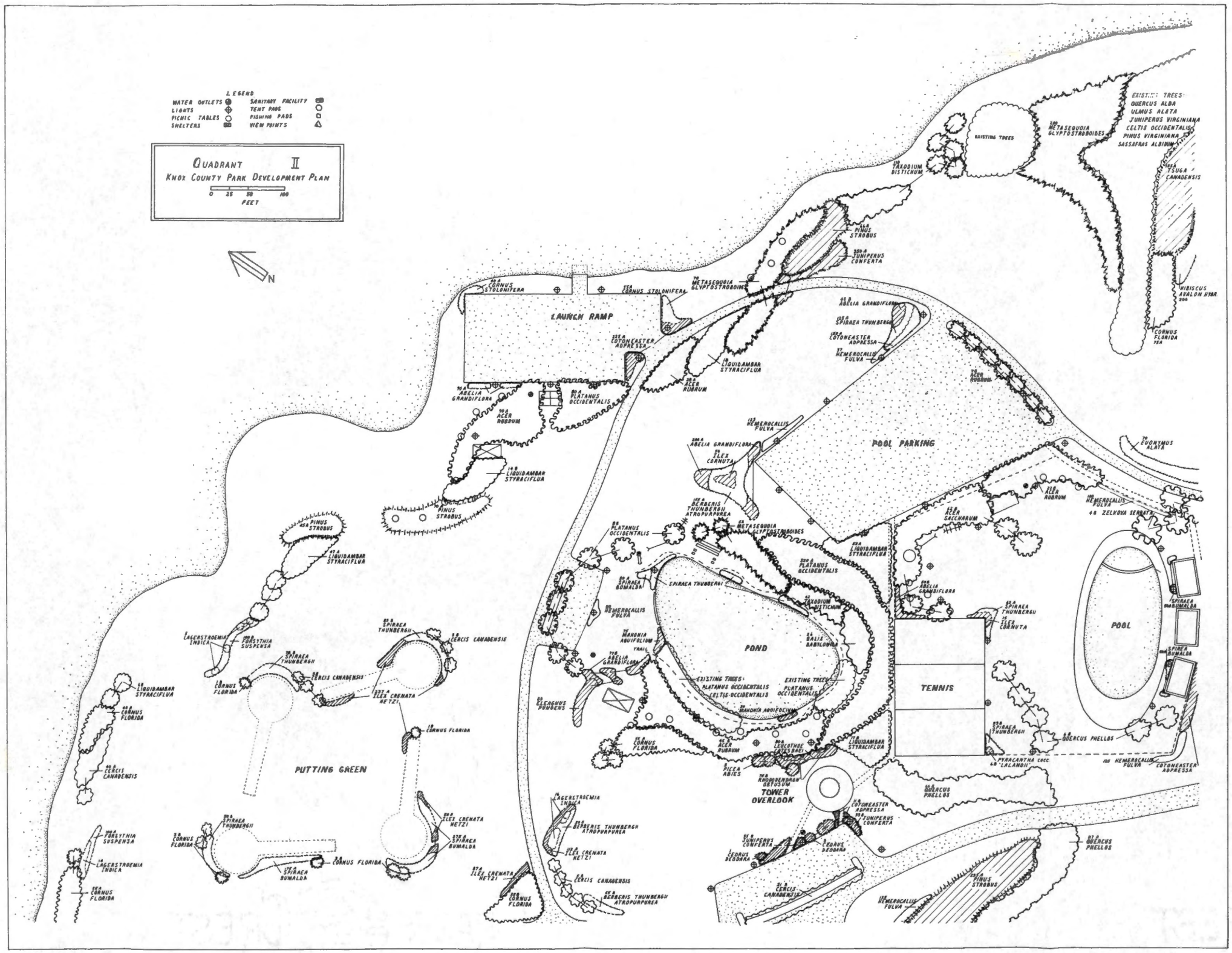

FIGURE 5

DESIGN OF QUADRANT II - NE

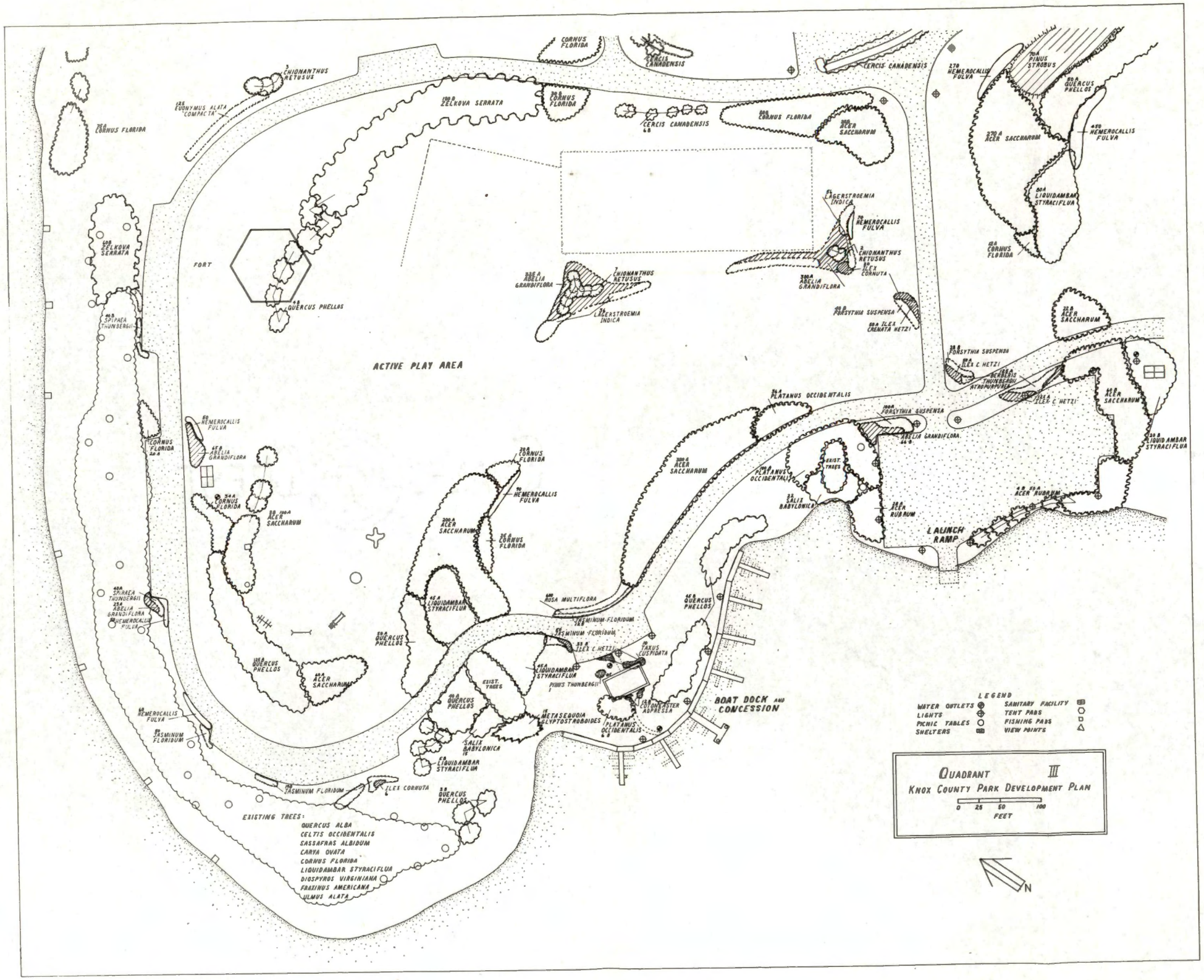

FIGURE 6

DESIGN OF QUADRANT III - NW

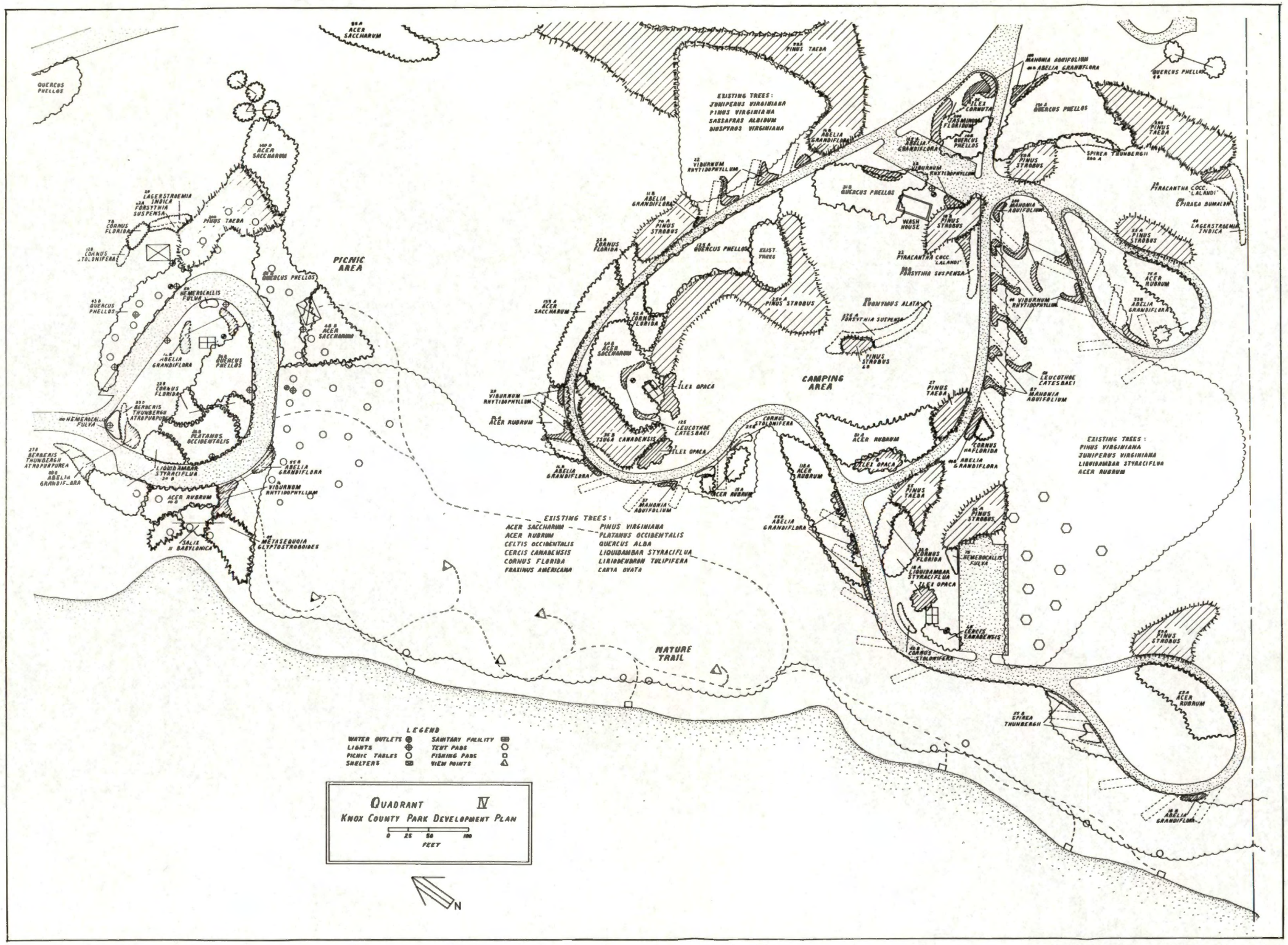

FIGURE 7

DESIGN OF QUADRANT IV - SW

TABLE VI

PLANT MATERIALS LIST

Quan.	Latin Name	Common Name	Size	B&B or BR	Spacing	Est. Cost @	Est. Cost Total
			Trees				
1171	Acer rubrum	Red Maple	A 3-4'	BR	6' oc	$ .12	$140.52
97	Acer rubrum	Red Maple	B 7-8'	BR	15' oc	1.00	97.00
1361	Acer saccharum	Sugar Maple	A 2-3'	BR	6' oc	.10	136.10
681	Acer saccharum	Sugar Maple	B 4-6'	BR	10' oc	.45	306.45
13	Cedrus deodara	Deodar Cedar	30-36"	B&B		2.25	29.25
95	Cercis canadensis	American Redbud	A 18-24"	BR	6' oc	.08	7.60
73	Cercis canadensis	American Redbud	B 3-4'	BR	12' oc	.13	9.49
12	Chionanthus retusus	Chinese Fringe Tree	5-6'	B&B		2.50	30.00
578	Cornus florida	Flowering Dogwood	A 18-24"	BR	6' oc	.10	57.80
384	Cornus florida	Flowering Dogwood	B 2-3'	BR	8' oc	.25	96.00
27	Ilex opaca	American Holly	30-36"	B&B	12' oc	2.00	54.00

TABLE VI (continued)

Quan.	Latin Name	Common Name	Size	B&B or BR	Spacing	Est. Cost @	Est. Cost Total
584	Liquidambar styraciflua	Sweet Gum	A 18-24"	BR	8' oc	$ .08	$ 46.72
82	Liquidambar styraciflua	Sweet Gum	B 3-4'	BR	12' oc	.15	12.30
431	Metasequoia glyptostroboides	Dawn Redwood	18-24"	6" can	8' oc	1.25	538.75
7	Picea abies	Norway Spruce	30-36"	B&B		2.50	17.50
2776	Pinus strobus	White Pine	A 6-10"	BR	6' oc	.01	27.76
98	Pinus strobus	White Pine	B 30-36"	B&B	10' oc	2.00	196.00
1857	Pinus taeda	Loblolly Pine	6-10"	BR	6' oc	.01	18.57
1	Pinus thunbergii	Japanese Black Pine	5-6'	B&B		4.00	4.00
536	Platanus occidentalis	Sycamore	A 18-24"	BR	6' oc	.09	48.24
40	Platanus occidentalis	Sycamore	B 5-6'	BR	12' oc	.60	24.00
903	Quercus phellos	Willow Oak	A 18-24"	BR	8' oc	.15	135.45

TABLE VI (continued)

Quan.	Latin Name	Common Name	Size	B&B or BR	Spacing	Est. Cost @	Est. Cost Total
362	Quercus phellos	Willow Oak	B 4-5'	BR	12' oc	$ 1.00	$362.00
280	Salix babylonica	Weeping Willow	4-5'	BR	8' oc	.20	56.00
152	Taxodium distichum	Bald Cypress	18-24"	BR	6' oc	.17	25.84
243	Tsuga canadensis	Canadian Hemlock	A 18-24"	BR	6' oc	.30	72.90
36	Tsuga canadensis	Canadian Hemlock	B 30-36"	B&B	12' oc	3.50	126.00
469	Zelkova serrata	Japanese Zelkova	2-3'	BR	10' oc	.10	46.90
		Shrubs					
1368	Abelia grandiflora	Glossy Abelia	A 12-18"	BR	2' oc	.13	177.84
792	Abelia grandiflora	Glossy Abelia	B 2-3'	BR	3' oc	.45	356.40
450	Berberis thunbergi 'Atropurpurea'	Redleaf Barberry	A 12-18"	BR	2' oc	.17	76.50
393	Berberis thunbergi 'Atropurpurea'	Redleaf Barberry	B 18-24"	BR	3' oc	.35	137.55
95	Cornus stolonifera	Red Osier Dogwood	A 18-24"	BR	3' oc	.11	10.45

TABLE VI (continued)

Quan.	Latin Name	Common Name	Size	B&B or BR	Spacing	Est. Cost @	Est. Cost Total
59	Cornus stolonifera	Red Osier Dogwood	B 2-3'	BR	4' oc	$ .28	$ 16.52
375	Cotoneaster adpressa	Spreading Cotoneaster	A 10-12"	BR	2' oc	.20	75.00
194	Cotoneaster adpressa	Spreading Cotoneaster	B 15-18"	6" can	3' oc	1.25	242.50
127	Eleagnus pungens	Thorny Eleagnus	2-3'	BR	3' oc	.25	31.75
123	Euonymus alata	Winged Euonymus	12-15"	BR	4' oc	.15	18.45
125	Euonymus alata 'Compacta'	Dwarf W. Euonymus	12-15"	BR	3' oc	.70	87.50
887	Forsythia suspensa	Weeping Forsythia	A 12-18"	BR	2' oc	.10	88.70
337	Forsythia suspensa	Weeping Forsythia	B 2-3'	BR	3' oc	.17	57.29
172	Ilex cornuta	Chinese Holly	18-24"	B&B	4' oc	2.00	344.00
711	Ilex crenata 'Hetzi'	Hetz's Jap. Holly	A 10-12"	BR	2' oc	.40	284.40

TABLE VI (continued)

Quan.	Latin Name	Common Name	Size	B&B or BR	Spacing	Est. Cost @	Est. Cost Total
395	Ilex crenata 'Hetzi'	Hetz's Jap. Holly	B 15-18"	B&B	3' oc	$1.50	$592.50
1317	Jasminum floridum	Summer Jasmine	12-18"	BR	2' oc	.30	395.10
350	Juniperus conferta	Shore Juniper	A 6-12"	BR	2' oc	.18	63.00
582	Juniperus conferta	Shore Juniper	B 12-15"	6" can	3' oc	.70	407.40
261	Lagerstroemia indica 'Rubra'	Red Crape-myrtle	2-3'	BR	5' oc	.35	91.35
255	Leucothoe catesbaei	Doghobble	10-15"	BR	2' oc	.50	127.50
591	Mahonia aquifolium	Oregon Grape Holly	8-12"	6" can	2' oc	.35	206.85
201	Pyracantha coccinea 'Lalandii'	Laland Firethorn	12-24"	6" can	4' oc	.35	70.35
148	Rhododendron obtusum	Karume Azalea	8-12"	BR	2' oc	.40	59.20
600	Rosa multiflora	Multiflora Rose	6-12"	BR	1' oc	.04	24.00
960	Spiraea bumalda	Bumalda Spirea	15-18"	BR	2' oc	.32	307.20

TABLE VI (continued)

Quan.	Latin Name	Common Name	Size	B&B or BR	Spacing	Est. Cost @	Est. Cost Total
977	Spiraea thunbergii	Thunberg Spirea	A 12-18"	BR	2' oc	$ .18	$175.86
989	Spiraea thunbergii	Thunberg Spirea	B 18-24"	BR	3' oc	.22	217.53
10	Taxus cuspidata	Japanese Yew	15-18"	B&B	4' oc	3.00	30.00
124	Viburnum rhytidophyllum	Leatherleaf Viburnum	18-24"	B&B	5' oc	1.75	217.00
18	Yucca filamentosa	Adams Needle	8-12"	6" can		.50	9.00
		Perennials					
2252	Hermerocallis fulva	Daylilly		3" pot	18" oc	.15	337.80
775	Hibiscus 'Avalon' Hybrid	Rose Mallow			2' oc	.18	139.50
TOTALS							
30,362							$8199.13

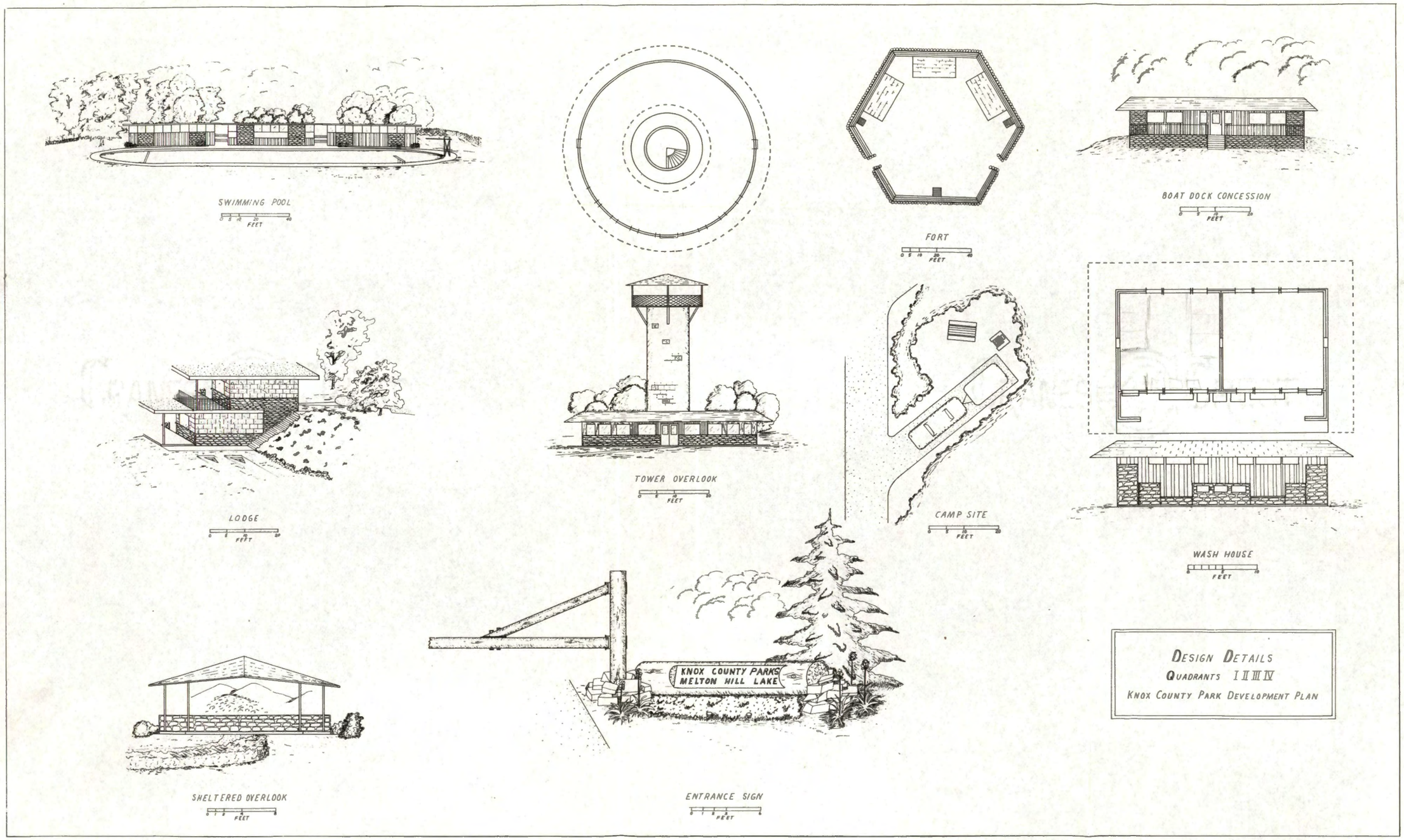

FIGURE 8

DESIGN DETAILS - QUADRANTS I, II, III, IV

provide ground level entrances and exits from a two level structure.

Most of the techniques used in the drawings were routine, but there were certain exceptions. Overlays of combined plot and topographic maps were used in increasing the scale by the grid method. Original maps at a scale of 1 inch equals 500 feet were increased to 1 inch equals 100 feet, and then to 1 inch equals 40 feet for the quadrants. The larger scale was much easier to work with and presented a more readable drawing. Transparent overlays were used in arranging for space allocation, planting design, and overall development.

CHAPTER IV

RESULTS AND DISCUSSION

The proposed development plan for a Knox County Park on Cruickshank Bend provides for its orderly establishment; so organized as to reduce the unnecessary duplication of equipment and facilities, to provide for maximum safety, to allow efficient use of available land, and to present the most desirable situations possible for park visitors. From such a plan, a schedule may be arranged to spread construction over a period of time, with assurance as to what the final product will be.

Further discussion of the development plan, as to its benefits to the public and its reason for existence, will be presented on the following pages relating to the quadrant drawings.

I. DESIGN OF QUADRANT I

The southeast quadrant (Figure 4, page 31) contains the main entrance, maintenance shop, reservoir, sheltered overlook, nature trails, lodge, and one of the two parking lots for the swimming pool.

Main Entrance

A visitor's initial contact with the park is very important, and should be as pleasant as possible. The entrance sign (Figure 8, page 41) identifies the park, but also has a pleasing, massive appearance which is suited to the location and surroundings. The sign could provide a symbol for future recognition, and could also be used on a smaller scale for roadside markers within the park.

Maintenance Shop

The ever-present problem of maintenance can be reduced with adequate space for storage of equipment and supplies. The maintenance shop is a must, but the noise and unsightly appearance need not be noticeable. This plan provides for the screening of such an area, with plants that add beauty to the overall design.

Water Reservoir

One of the highest points in the park was selected for the location of a gravity flow water reservoir. Trees were planned for screening of such a dominant structure, and to provide an outline for large open spaces in the area. A combination of both evergreen and deciduous plant materials adds interest to the site through the four seasons.

Sheltered Overlook

A knoll on the same elevation as the water reservoir is the site of a sheltered overlook, which presents the first distant views of the lake, shoreline, hillsides, and Cumberland Mountains. Nature trails lead from the overlook down through the woods to fishing pads at the shoreline. Picnic tables were provided at this point for the visitors' pleasure, with some screening by flowering plants for privacy.

Lodge

The lodge is located on a high point, commanding excellent views of the park, lake, and mountains. Each unit of the lodge has balconies or patios with a northern exposure to provide views of attractive scenery. The lodge will satisfy a need for people who want more comfortable overnight accommodations, and for large groups such as conventions, reunions, or sporting events. Play apparatus, shuffleboard, and a path to the nature trails have been planned for the guests, and the pool is nearby for convenience. A long drive connects the lodge to the road, and is landscaped with masses of trees and shrubs for shade and a pleasing appearance.

Swimming Pool Parking Lot

One of the two parking lots provided for the pool

lies in this quadrant, with entrances from the one-way road and the main road. This double entrance and exit allows adequate flow of traffic in both directions. Partial screening prevents direct view of the lot, and adds comfort through shading.

II. DESIGN OF QUADRANT II

The northeast quadrant (Figure 5, page 32) contains the swimming pool, a boat launching ramp, a pond, the overlook tower with concession stand, and golf putting greens as the major features.

Swimming Pool

Water appears to have an attraction for most people, and the pool planned for this park takes this into consideration. The pool is large in comparison to other pools in Knox County, or to the suggested standards, but the added space will reduce overcrowding, add safety, and provide a more pleasant experience to visitors. Wide grassed areas are planned for sunbathing, with shade and picnic tables for added comfort and enjoyment. Plantings help to provide interest, screening, and attractive surroundings to the area.

Overlook Tower

A wide range of unobstructed views are provided from the overlook tower, formerly an abandoned silo. A

concession stand at the base of the tower will serve the needs of campers, picnickers, and others who need extra supplies. The tower will likely become a meeting place because of its height and dominant position. The concession stand would be a convenient place for people to check out equipment for play, such as for the tennis courts nearby. The sketch (Figure 8, page 41) suggests a possible form for the final appearance of the overlook tower and concession.

Pond

The small natural pond has a pleasing appearance, which is accentuated in this plan, and utilized to provide a restful relaxation area. People may picnic, take a stroll around the pond, allow the children to sail toy boats or use the play apparatus, or just sit and relax. Plantings help to give privacy to the area, and to present attractive settings to the visitor.

Launching Ramp

Launching ramps, 20 feet wide, were constructed before impoundment of the lake, on two sides of Cruickshank Bend. This quadrant contains one of the ramps, which has not been used. This plan indicates the use of the ramp, and suggests that it be used for water skiers, so eliminating other boats and reducing the possibility of accidents. Facilities were planned for skiers' comfort and convenience,

through picnic tables, lighting, water outlets, shelter, and sanitary facilities. Shade trees and plantings of shrubs add to the pleasing appearance of the area.

Putting Greens

Putting greens help to make good use of level to gently rolling land, while preserving the open spacious feeling, and beautiful views for other parts of the park. Small plantings provide background to the greens, and help to stop the ball if overshot, adding safety for people nearby.

III. DESIGN OF QUADRANT III

The northwest quadrant (Figure 6, page 33) contains the major active play area, the boat dock and concession, and the main launching ramp.

Active Play Area

This large play area provides an excellent site for children to expend their energy. Football, baseball, the replica of an old fort, play apparatus, and wide open meadows for running are available. Necessary facilities are located nearby, and picnic areas are just across the road. Many wide spaces have been preserved between the picnic tables, in order for people to reach the shoreline without disturbing picnickers. Natural vegetation will help to

provide shade and screening to parts of this area,with some plantings added for interest, color, and screening. This area is separated from the more heavily used areas, and would have less traffic, providing an additional safety feature.

Boat Dock and Concession

The boat dock lies in a partially protected cove, with a gently sloping bank from the shoreline to the roadway. The dock is located adjacent to the main launching ramp, which makes it easily accessible to boaters in need of fuel or other equipment. The concession, catering to the boating and fishing public, would contain refreshments, supplies, and equipment for the boaters' needs.

Launching Ramp

This main launching ramp, serving most of the boaters coming to the park, is adequate in size, and provides easy launching of boats. The site is almost level, and appears to be ideal for this activity. Utilities are planned nearby for the comfort of these boaters, and picnic tables help to add further pleasure to the outing.

IV. DESIGN OF QUADRANT IV

The southwest quadrant (Figure 7, page 34) contains

the major picnic area, a nature trail, the campground, and the manager's residence.

Picnic Area

This main picnic area was planned for an area with existing trees for shade, and which had reasonably easy access to other park activities. Tables are located far enough from each other for a certain amount of privacy. All of the existing trees, and most of the other existing vegetation is planned for utilization in providing a pleasant, attractive eating area. Utilities are planned nearby for the visitors' comfort and convenience. Open play areas are within easy walking distance, for the children whose parents want to relax after a large meal. Plantings are designed to support existing plants in adding to the enjoyment of the people using this picnic area.

Nature Trail

A nature trail leads from the major picnic area, through the woods to the shoreline. Following the shoreline, the trail leads to outcroppings of rock from which beautiful views of the lake may be enjoyed. The trail follows an irregular line to the end of the park, passing some fishing pads and picnic tables for the hikers' use. Vegetation in this area is varied, and consists of about 25 species of trees along with numerous shrubs, vines, ferns, wildflowers,

and mosses. Little expense would be required in developing this area for the public's use.

Campground

The camping area is planned for utilization of the existing tree cover, while new plantings are maturing. One-way roads are planned throughout the area, except for one loop road nearest the shoreline for safety and ease of trailer movement. Sanitary facilities and water outlets have been provided within easy walking distance, for campers' comfort and convenience. A wash house is planned within 500 feet of every campsite. Trailer spaces are placed at an angle for easier parking, and to screen the sitting area from view and headlight glare at night. Tree and shrub plantings help to give privacy, attractive settings, and shade to the living areas, while outlining areas of special use.

Manager's Residence

A manager's residence close to the main entrance gives him close supervision of the people coming into the park, and also the people using the campground. The house is screened from direct view, with the roads being visible. Shrub masses and trees help to blend the structure into the surroundings, and provide a pleasing appearance.

CHAPTER V

SUMMARY AND CONCLUSION

A study of parks and recreation in the United States will immediately bring forth examples of tremendous growth. Increases in demand for recreational facilities and space have not been met, with the resulting condition of overcrowded parks and recreational areas.

Many of these overcrowded conditions and problems can be reduced through adequate planning and design, based on existing conditions, projected trends in population, park attendance, and income. Knox County, Tennessee is now attempting to follow this method in the development of park land they now control.

Figures 3, 4, 5, 6, 7, and 8 (pages 30-34, 41) indicate a development plan and design for a Knox County Park on Cruickshank Bend at Melton Hill Lake. These drawings are the results of studies of the site, the surrounding land, the lake, and the recreational needs of Knox County. Facilities have been provided for a cross-section of the population, as to age groups and activities desired.

While the planning and design of recreational areas will not completely eliminate <u>all</u> conflicts and problems, we may expect a much more workable arrangement than if <u>no</u>

planning took place at all. Road systems that follow contours will generally be more easily constructed, and more comfortable for driving. Safety may be incorporated into the plan such as regulated traffic flow, special provisions for water skiing, and placing children's play areas away from traffic. Scheduling of the development will allow work to be spread over a period of time, and yet knowing what the final product will be. Maintenance problems can be worked out in advance, or often eliminated. Plantings may be carried out over several seasons, and using smaller plants at lower cost, with assurance as to the final appearance of the park. The total result is the pleasant experiences received by visitors to the well planned and designed park. Every effort has been made to incorporate these features into the development plan for Cruickshank Bend.

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LITERATURE CITED

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