DRAPER'S MEADOWS, A COMMUNITY DESIGNED AND LANDSCAPED FOR LIVING

by

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INTRODUCTION

Object of the Investigation

Since the time of American Colonial gardens, landscaping and the design of residential and neighborhood developments have largely been, either a copy of European or Asiatic designs adapted to American use, or an extension of the type of design which is in style at the particular time. Little thought perhaps had been given to the development of homes and grounds which would be suitable for both living and enjoyment. More recently, however, such modern architects as Frank Lloyd Wright have begun to design homes which primarily satisfy the requirements of living for the families of today. Such designs, one must admit, are extremely radical when contrasted with the conventional designs which have been sold to the public. Yet, time and usage will decide whether or not the population will tend to follow conventionality or become radical enough to begin to enjoy living in homes designed for living, with surrounding grounds and community features also designed for enjoyment and living.

The object of this thesis is to present a type of design for a community which might provide additional housing for the staff members of Virginia Polytechnic Institute, Blacksburg, Virginia. An effort was made to deviate from the conventional rules of

community planning and develop a new type of community design which more nearly meets the needs of present-day man, through providing a community uniformly designed and landscaped for living.

Location and Description of the Site

The site of the proposed development is a portion of the Smithfield farm, which lies on the Blacksburg-Dublin plateau near Blacksburg, Virginia. The total area of the site is in pasture land controlled by Virginia Polytechnic Institute, Blacksburg, Virginia. Much of the topsoil is a slightly too moderately acid silt-loam type soil derived from Dolomitic limestone, with a heavy, underlying clay subsoil. The climate is humid, with a seasonal rainfall of approximately 45 inches. The seasonal temperature is variable, ranging from winter extremes of 0° F. to summer extremes of sometimes 100° F.

Historical Background of the Site

The proposed community would cover a 36.9 acre tract of land formerly belonging to "Smithfield," a colonial estate once belonging to Col. William Preston, a pioneer settler of this region. This land has a significant historical background. Summers (1903), Johnston (1906), and Pendleton (1920), all supply the following facts relating to "Smithfield" and the Draper's Meadows settlement.

In the wake of the Patton-Walker expedition, a settlement was made at Draper's Meadows in the latter part of the year 1748. This settlement was the first pioneer settlement in the New River region.

In the French and Indian War beginning in 1753, many of the Indian tribes were allies of the French in their war against the English. The Indians were directly responsible for many uprisings against the westward moving pioneer settlers. On Sunday, July 8, 1755, the day before Braddock's memorable defeat, a war party of Shawnee Indians stole silently on the peaceful Draper's Meadows settlement and killed, wounded, or captured the settlers present.

In 1765 Col. William Preston acquired Draper's Meadows and subsequently changed the name to Smithfield, in honor of his wife, who was formerly a Miss Smith, of Hanover County, Virginia.

The Draper's Meadows settlement surrounded the spring which is located near the northeast bank of the creek flowing through the proposed development site. "Smithfield," the colonial home of Col. Preston, is situated near the southeast boundary of this tract of land.

REVIEW OF LITERATURE

The history of landscaping, from primitive times to 1860, has been briefly summarized. This was done to show how recent types of landscape design have been influenced by those works of the past.

Hubbard (1941) relates that "very early in his history man shaped the economic changes which he made in the earth's surface so that they gave him also an aesthetic satisfaction. This satisfaction was due in great measure to the fact that the changes were obviously man-made; they bore witness that he had impressed his ideas on the stubborn natural material. Much later in his development -- almost, it might be said, in modern times -- came the period when man, instead of being isolated and overpowered in the midst of wild nature, found himself cramped and oppressed by the works of his own hands, and sought relief in the aesthetic pleasure to be derived from landscape which expresses not man's will but the operation of natural forces.

Within comparatively recent years, there has come a general recognition of the value to the public of designed and organized cities, and of parks, reservations, and other out-of-door spaces, and a greatly increased interest in private pleasure-grounds of various kinds. There is now an effective demand for designing skill using as materials ground forms and vegetation, and for

designing skill in the arrangement of landscape and architectural forms -- streets, parks, buildings -- in larger unities, for public use. Landscape architecture requires of its practitioner diverse abilities not often found in the same person: the aesthetic appreciation and creative power of the artist, together with the executive skill of the business man. The landscape architect should know the materials of his art; ground forms, vegetation and structures in their relation to landscape.

From the point of view of the fundamental ideal expressed by the designer, styles of landscape design fall into two classes, those which express the dominance and the will of man and those which express the designer's appreciation of the power and beauty of nature." (These designs are formalized or humanized ones and those naturalistic, as they can be called formal and informal.)

"The Egyptians have left us records of their gardens which in their early form were inner courts with fruit and ornamental plants, but later were extended outside to larger rectangular areas, formally planted. The Babylonian gardens are known to have been terraced, commanding extensive views, as in the case of the famous "hanging gardens" of Babylon, and cooled and decorated by water features. In ancient Persia, again, water was a leading element in the enclosed gardens, which were made pleasant by shade and fruit trees. The groves and orchards of the Greeks reflect the immediate influence of Persia on the treatment of outdoor

areas after the Persian wars. Classic pleasure-grounds, however, find their highest development in the Roman villas, carried out as splendid architectural schemes, and with regard to the advantages of cool breezes, view, shade, and the decorative beauty of water and statuary. In the Middle Ages we find in the monasteries gardens primarily utilitarian, with areas for fruit, vegetables, herbs, and flowers. Meanwhile, in the Far East landscape design had been developing to a high degree of definiteness and finish. Chinese gardens, said to date from earlier than 2000 B.C., took the form of miniature landscapes, carefully designed and enclosed; and with the spread of Chinese culture the Japanese took suggestion from these landscaped gardens of China and ultimately produced styles of garden design which expressed their reverence for nature, wrought out, conventionalized and symbolized by successive generations of artists, in forms of great intrinsic beauty. The Moorish gardens in Spain had for their direct prototype the gardens of Persia and Syria. The Spaniards influenced the style of the buildings and gardens of Mexico and California. The villas of the proud, ostentatious, artistic nobles of the Italian Renaissance were based on the design of the gardens of the old Roman patricians. In France, England, and Holland the Renaissance called forth an expression of architectural design in outdoor areas, stimulated by Italian influence, which flowered in different periods.

The Dutch had their small, trim, topiary gardens; the English their Tudor and Elizabethan country estates with pleasant flower gardens, enclosed one next to the other; and the French had their great open parterres and large gardens, consisting of different treatments of rectangular units more or less intervisible, -- precursors of the work of Le Notre. Coincident with the later Renaissance, but springing from Persian influence through the Mogul dynasty, a style of garden design was produced in India, which, as in other hot climates, utilizing shade and flowers and fruit, and water in long pools and splashing fountains or waterfalls, covered areas so great that the designs rival in magnificence those of the Grand Style in France. Formal design in the 'grand manner' extended all over Europe, even into Russia, was often carried to extremes by incompetent designers and thus invited a reaction toward the inspiration of Nature. The Landscape Style, originating in England where it was expressed in the work of Kent and Brown, was influenced deeply by the work of such landscape painters as Claude Lorraine and also somewhat by ideas introduced from China. It spread to France and to other parts of the Continent with the Romantic movement and fell later into extremes as unfortunate as any of those of formal design. The work of Repton and his followers inspired the park-like estates in America with which Downing was familiar and the tradition of which

he followed in his designs, laying, however, increasing emphasis on the use of native vegetation. At the time of his death in 1852, the industrial growth of the United States had begun to cause congestion in towns, and Downing was a leader in the movement to ameliorate the life of town-dwellers by the provision of public parks.

It was reserved for Calvert Vaux and Frederick Law Olmsted to develop to meet this need of a style of naturalistic landscape design which has had the most profound influence on the work of the past 50 years, -- compositions of open meadows enclosed and diversified by woods, in which the public may find a sense of seclusion and of relief from the insistence of urban surroundings. In Central and Prospect parks in New York and Franklin Park in Boston we have this style at its best."

In 1869 Frederick Law Olmsted (1931) designed a suburb for Chicago, Illinois, in which he stressed the need for wider, more park-like streets. He organized parks and other community improvements in order to receive a higher lot price for the subdivision. Olmsted might aptly be called the father of the contemporary school of community design and city planning.

Menhinick (1932) stated sixty years afterwards that Riverside, Illinois, the suburb which Olmsted designed, was still a well-designed and permanent community, due to Olmsted's provision of adequate open spaces.

Long (1891) explained his design of several "Park-like" suburban developments near St. Louis, Missouri, and in western New York state. He emphasized spatial relationships and unity of design in an admirable way for one so near the beginning of that relatively new field of community planning.

Root and Kelley (1914) recognized the need for the improvement of cities by a better arrangement of available space to bring in more country-like conditions. They proposed that one solution to the problem of civic betterment would be the building of "garden cities."

Lohmann (1927) expresses the idea that the home grounds should be planned preceding the construction of the house and should proceed with the planning of the house and its location.

Weir (1928) stated that the use of leisure time during the hours when people are not earning a living closely affects their working life. The term park has come to mean any area of land set aside for the active or passive recreation of the people.

Whitten and Adams (1931) made a survey of neighborhoods of small homes in America and England. Drawings showed English communities designed for the comfort of the residents while still possessing the somewhat stiff, semi-formal design.

Lohmann (1932) expressed the idea of making communities more garden-like. He considered it one of the most important opportunities for improvement of a town plan.

Rehmann (1933) and others about this same time, in the days when plant ecology was a comparatively new science, suggested that landscape architects should be well-associated with the ecological aspects of the site. A knowledge of plant associations should increase the enjoyment and understanding of the natural landscape.

Lohmann (1941) recognized the fact that the house should be planned and located in accordance to the requirements of the topography of the ground, views, and exposures. The indicated that the front yard should serve as an entrance and other areas of the property should be set aside for private use, garden, and service areas. Thought should be given to recreation areas, preservation of natural beauty, and development of high areas for housing, if the topography permits. Park systems should have well-developed recreation areas, a system of open spaces, and paths that "minister to the pleasure of our leisure." He concludes that residential areas "should be made more park-like."

Eckbo (1941) stressed the idea that gardens are outdoor space for people to live in and that garden design is the organization of that space. Designers must draw from the world they live in, in developing gardens.

Eckbo (1942) stated that "site planning is the total space organization for a specific project on a specific site." It is

the arrangement of environments for people. Such planning should be the result of collaboration between architects, engineers, and landscape architects or city planners.

Churchill and Ittleson (1944) best summed up America's opinion of contemporary community design by saying that "there is a general feeling that the endless rows of identical houses on narrow lots so characteristic of the American suburban housing of the past decade does not satisfy the needs of the people; that the family's needs extend beyond the four walls of the individual houses to the broader environment of the community as a whole."

Eckbo's idea (1946) of a successfully planned community is one in which all of the buildings both public and private are related to each other by service facilities and recreational areas.

A sort of communal garden has been suggested by Tunnard (1948) as a method for providing spaces for recreation and development between rows of informally spaced houses in a community development. He suggests the possibility of co-operative maintenance by the community's inhabitants, of communal gardens.

The demand for a modern or contemporary design, according to Bottomley (1948), "arises from the current trend in all forms of the applied arts, from close association with architecture, together with a less worshipful attitude toward things of the

past." In traffic free days, residences faced main street. Now, privacy found in the back yard is preferred to the old front porch. Consequently, the front porch has been moved from the front to the side to the rear of the house. "There has been a swing toward strength and simplicity, toward plain surfaces, toward the unsymmetrical rather than the symmetrical, toward smartness rather than sweetness. Line and form and its independence of decoration has been emphasized. Instead of bending all efforts to arrive at regular shapes which are directly on axis and evenly balanced, the new idea would be to take the shape of the area which is available, whether rectangular or irregular, and from it create forms and proportions that are different."

Eckbo (1950) produced a very theoretical discourse on the subject, "Landscape for Living." He urged American landscape architects to continue to develop the type of American landscape architecture which is in progress and to stop copying the faults of European design.

METHODS OF INVESTIGATION

For this research thesis, the methods of investigation will be discussed under the following enumerated headings: introduction, topographic survey, design, construction details, and planting plan.

The thesis problem developed from a discussion with various members of the graduate committee, of the writer's future intentions in working in landscape design. The location of the site of the proposed community-development thesis problem was suggested by the author and approved by the graduate committee. The physical description was ascertained by viewing the property and consulting various research literature relating to its physical properties. Information relative to the historical background of the site was obtained by library research.

To facilitate the work of designing, a topographic survey of the site was made during the summer of 1951. The resulting topographic or contour map was used as a base map for projecting other drawings accurately.

From the topographic map, a plan of the community showing the sub-division of lots, locations of roads, the park, the playground, and other areas was made.

Construction detail plans were prepared to show grading and drainage, roads, dam, and sidewalk construction, and street

lighting. Floor plans and perspectives were drawn to show the community center and a typical house.

Planting plans were developed for the residential properties, the playground-park system, and other areas.

These investigations and the resulting new ideas derived from them were correlated with previous work done in landscape design by notable authorities in that field.

TOPOGRAPHIC SURVEY AND PREPARATION OF TOPOGRAPHIC MAP

Introduction

A complete and reasonably accurate topographic survey of the site was made, and a topographic map was drawn from the data taken in the field survey. See Plate 1.[1]

Methods Used in Making the Survey

The difficulty of securing rodmen and chainmen made it necessary to use the cross-section method of mapping on the major portion of the survey. The procedure for running the field survey and collecting the data consisted of dividing the field, as nearly as possible, into 100-foot squares and determining, by using the level, the respective elevations of the points at each corner of the square in relation to an established bench mark with an assumed elevation. Because of the gently rolling terrain, the cross-section method proved to be very satisfactory.

On the remainder of the field, the radiation method of laying out contours or determining elevations was used. The terrain of this section of the field was steep and hilly. The radiation method of running a topographic survey produced data of more

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[1] Plates 1, 2, 3, 6, and 15, are included at the end of the thesis.

substantial value, in relation to extremely hilly terrain, than the cross-section method could provide.

The radiation method consisted of establishing a level over a turning point located in respect to a permanent landmark such as a fence. From this turning point, by using a level and rod, rays were measured to different points along a horizontal plane, and the angle between rays was recorded. When a complete circle had been turned, or the extent of the field boundary had been met, an adjustment was made on the rod, and another set of elevations were determined. From each turning point, as many elevations as the slope would permit, were run.

The boundary was determined by using the compass on the level to determine the corner angles of the property. Distances from point to point were obtained by chaining. The location of certain surface features such as fence lines, trees, power lines, and rock outcroppings was determined by intersecting the points referred to with lines extended from a base line of predetermined length. All data were recorded in a field notebook.

Methods Used in Plotting the Map

The topographic map was completed on the drawing board from the data compiled in the field survey. The first map was drafted with a scale, 1" - 100'. A subsequent draft was made to the scale, 1" - 50'. On the smaller map, contours were expressed at five-foot elevation intervals. Contours on the larger map were expressed at one-foot intervals. Ground-surface features such as fences, power lines, and roads were represented with conventional mapping signs and symbols.

The cross-section method of determining elevations provided an easy means of plotting the contours on the map. Since the elevation of each corner of a 100-foot square was determined in this method of mapping, it proved to be very simple to graphically represent such data; and by interpolating, points along the same elevation could be located in the squares and connected to produce a reasonably accurate contour map. The radiation method of mapping consisted of locating in the field points of equal elevation and recording these data. Then, these points were located on a map. When the points were connected, a contour line was produced. The contour lines drawn by each method were joined to provide a complete contour representation of the field. The boundary of the field and the surface features were then located to complete the contour or topographic map.

DESIGN OF COMMUNITY

Introduction

The main objective of this research problem, as has herein been expressed, is to present a new type of community design which would more nearly satisfy the human demand for space for living. Simplicity and beauty were made essential elements in planning the design of spatial relationships for human habitation. An effort was made to deviate from the usual American community scene, of which Eckbo (1950) aptly described as follows: "Main street, urban housing, the standard residential suburb -- has a general commercialized sterility which is far below the technical and esthetic potential of our culture."

While some contemporary architects, landscape architects, and community planners do consistently refrain from planning and executing developments which embody the age-old concept of a straight and formal line, many other builders adhere to the practice of that sort of design, due to its cheaper cost and easier construction. The demand of prospective buyers and tenants for more space and their subsequent turn to the new design to satisfy this demand tends to justify the effort that is being directed toward contemporary design.

Weir (1928) and others say that people, as they have more leisure time to devote to recreation and relaxation, desire more space in which they can enjoy their leisure time. One may witness the holiday mass-departure of people who live in the endless rows of contiguously spaced residences and apartments in our larger cities and appreciate this indirect demand on the part of the people for better spatial relationships.

While the town of Blacksburg is not subjected to such adverse living conditions, this proposed community design can serve as an example of a solution to a problem of community development for this particular or some other related area. It is admitted that this design, as it stands, would not be adaptable to nearly all situations where a community development is needed, but with some modification and adaptation, it could serve as a model for many communities.

Sub-dividing

The community of Draper's Meadows would rest on gently rolling terrain which is bisected by a small stream of perhaps four to five feet in width. A park, playground, community center, and 32 property lots were provided on 36.9 acres of land. See Plates 2 and 3. The lots were located on the higher, well-drained slopes in such a way as to render some pleasant view from the lots to a

beautified space set aside for public use, such as a playground or park. The playground was located along the creek, the normal course of which was altered somewhat to provide more play space. The park was situated in that area of ground lying between the lots located on the higher ground. It might be pointed out here that the park-playground system would probably be large enough to satisfy the recreational needs of two to three other communities which could be built on the areas of ground surrounding this system. A childrens' playground was located off Patton Street to provide for the recreational needs of children in that general area. Streets were allowed to follow natural contours, whenever possible. By using turn-arounds in the street design, through traffic would be eliminated.

Locating Houses

Since lots ranged in size from those 100' by 120' to those of 170' by 180' and the topography was not the same on any two, careful consideration had to be given to arranging the houses. Here, the most radical or unorthodox part of the design and the reasons for it will be discussed. See Plates 2 and 3.

The motor age has been principally responsible for the modern trend in architecture, namely that treatment of residential housing design which has caused the garage to be located in easy access

of the kitchen, and the front porch moved from front, to side, to rear yard. As a result, most drivers park their automobiles in the rear yard, cutting it up into parking and service sections, while the front yard is beautified but, from the standpoint of utility, ignored. It serves only a decorative purpose, leaving the front door sometimes unused for days, since guests use the easily accessible rear entrance, too. Narrow streets and inadequate parking space at the front of the house have prompted many persons to park in the rear yard.

In view of this unfortunate situation, (perhaps tradition would be a more appropriate word), that generally prevails in past designs, the designer of Draper's Meadows has gone far from reproducing the usual house-lot relationship by reversing the normal position held by a residence on a lot. All living areas of the homes have been designed to face away from the street, and, where possible, to afford one a view out into the park from the living areas. This method of location provided a means by which the service area and parking area would be located in a front yard appropriately landscaped to offset the possibility of a probable reflection on the beauty of the development, while retaining a space in the rear yard which would be private, unmarred by drives or service features, and yet utilized to its fullest potential, see Plate 15. The parking area in the front

yard was designed to accommodate the owner's as well as several visitor cars.

Type of Houses Used

In this community, which is designed in the most modern or contemporary thought, only residences portraying this present era in design would be contemplated. Such houses would be constructed, for the most part, of glass and other ceramic materials. See Plate 4. The garage or parking area is focused on a main entrance, leading off to the kitchen and other parts of the house. Individual rooms would be divided either by walls, curtains, or some other means of partitionment. The main living room would be focused on the private rear yard and the terrace.

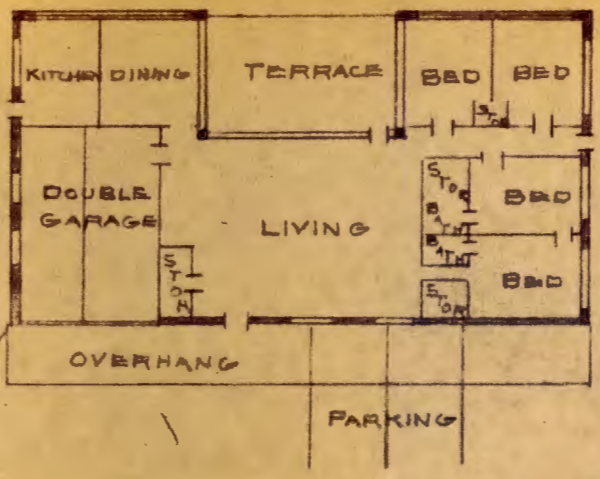
Community Center

The community center is located, see Plates 3 and 5, on the site of the old Draper's Meadows settlement of 1748-1755. Appropriate bronze memorial tablets commemorating the settlement and relating details of the subsequent massacre would be established some place near the vicinity of the original site.

The purpose of a community center would be to encourage community recreation through providing a central building for holding

FLOOR PLAN AND PERSPECTIVE FOR HOUSE

SCALE 1"=25'

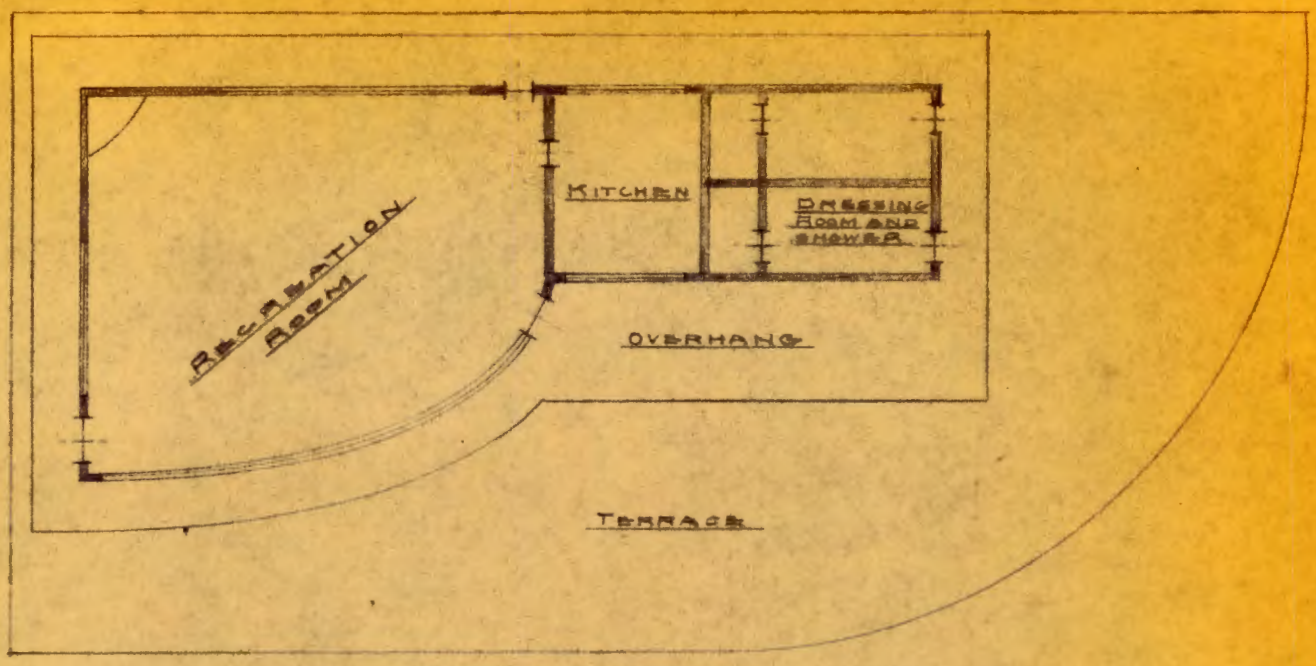


FLOOR PLAN

Figure (1)

PERSPECTIVE

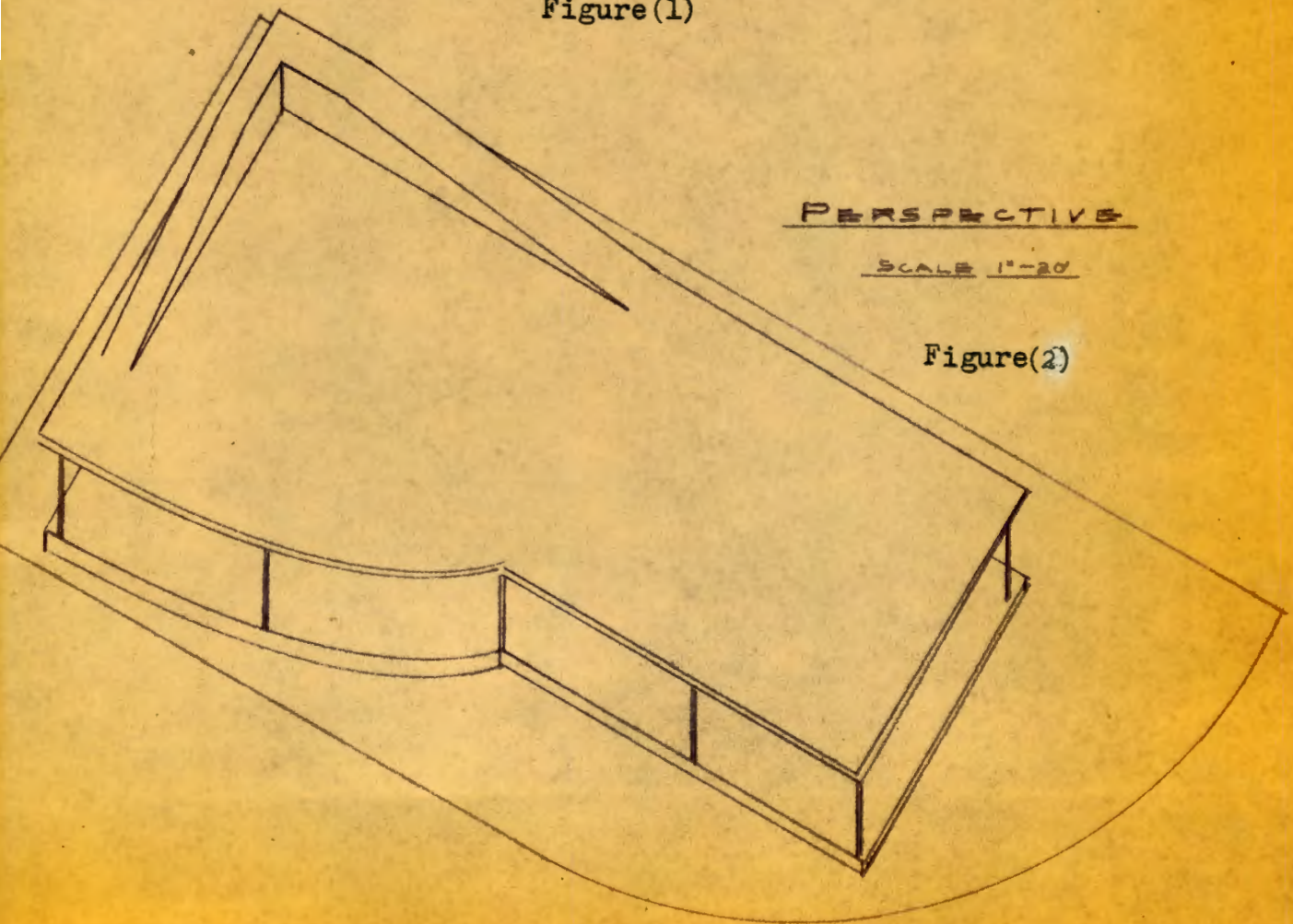
Figure (2)



FLOOR PLAN FOR COMMUNITY CENTER

SCALE 1"-20'

Figure (1)



PERSPECTIVE

SCALE 1"-20'

Figure (2)

club meetings, staging social programs, and providing a building for dances and other occasions. The swimming pool would be used in conjunction with the playground and the community center. The floor plan shows the community center equipped with a kitchen, bath-houses, a large recreation room with a picture-window wall viewing the terrace, and a pond in the background. An overhanging roof would tend to protect persons outside the community building on rainy days.

Playground

In the proximity of the community center, playgrounds were provided to enable persons to pursue the following games: baseball, softball, football, tennis, and other minor games, the locations of which could be improvised. In addition to these games, a swimming pool was provided, along with additional sites which could be developed for children's swings and slides. The children's playground would contain only an open ground with adjacent areas set aside for swings and slides.

Park

The park was designed as a series of open spaces bounded by trees and groups of trees, providing meandering paths from space to space and to the picnic areas. A pond of approximately two acres was developed along with the park, "to provide for the use of leisure time." It would be large enough to contain a quantity of fish, but it wouldn't be conducive to boating or swimming, due to its size, general disposition, and lack of purity.

From those residences located on higher ground, a panoramic view of the park unites it with the individual garden spots on the smaller lots. Such a view tends to magnify the spatial area of a small-property garden, giving great satisfaction to the owner.

CONSTRUCTION DETAILS

Introduction

This section of the thesis is intended to give the reader some idea of construction details of those surface constructions which would either detract from or add to the beauty of the design, due to their inadequacies or vice versa. Such surface features could be enumerated as: streets, curbing, street lighting, grading and drainage, fireplaces and picnic tables, and dams.

Grading and Drainage

The community area was graded in such a way as to render all future residence sites on nearly level ground, which was sloped just enough to afford good surface drainage. See Plate 3. The park system was left, as nearly as possible, lying on original natural contours. On the grading plan, solid lines represent original contours, and dotted lines represent new contours. The contour interval is one foot. Following contours around the drawing enables one to realize that most of the residences are located on high ground, commanding some desirable view over the park-playground system.

The drainage system, see Plate 6, is composed in general of main lines following the valleys, secondary lines following the streets and running into the proximity of the community center, and branch lines running to residential lots, catch-basins, and the swimming pool. This drainage system is intended only to carry away that portion of surface water which cannot readily be adsorbed by the soil, streets, or other surfaces.

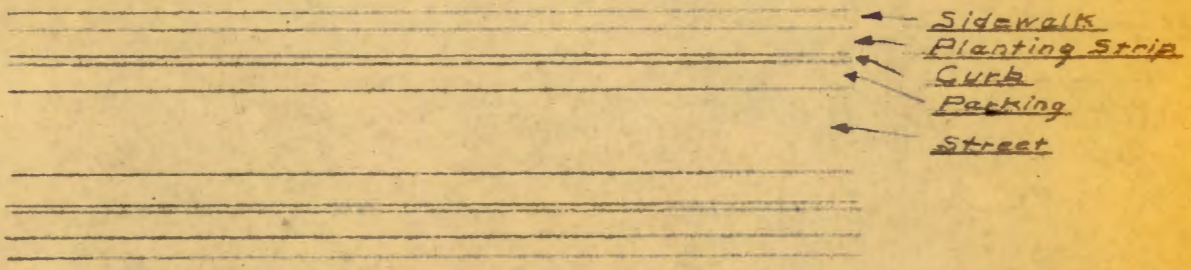
Sidewalks and Streets

The sidewalks and streets, see Plate 2, were laid out in such a manner as to discourage traffic and generally restrict the use of the streets to inhabitants of the community. This problem was solved by providing turn-arounds at the ends of streets.

The street as planned, see Plate 7, would be 36' wide from curb to curb, allowing for an eight-foot wide parking space to extend along each side with 20' remaining in the middle of the street for traffic lanes. A curbing was provided on each side of the street to carry away excess water during rains. A six-foot planting strip was left between the curbing and sidewalk, to satisfy the space requirements for tree plantings. A five-foot sidewalk was planned along each side of the street, to accommodate pedestrians. A pathway to the children's playground

Plate 7.

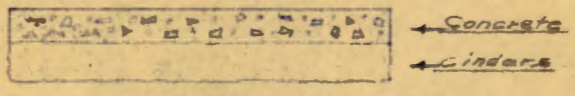
CONSTRUCTION PLAN FOR STREET



STREET PLAN

SCALE 1"=50'0"

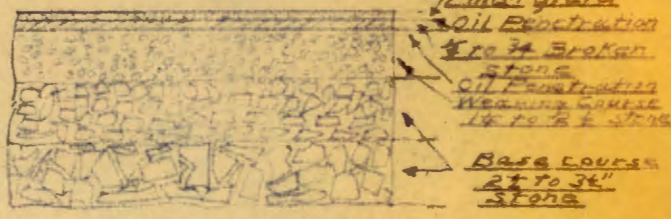
Figure (1)



CONCRETE SIDEWALK

SCALE 4/5" 1'0"

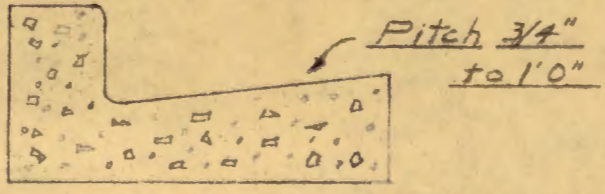
Figure (2)



MACADAM STREET

SCALE 1"=1'0"

Figure (3)



CONCRETE CURB

SCALE 1"=1'

Figure (4)

was left between properties on Patton Street and Smithfield Drive. See Plate 2. This path will provide a means of ready access to the park without having to go out of the way around streets.

The street paving would be macadam, which would afford adequate smoothness, traction, and durability. The sidewalk would be constructed of concrete, with a cinder base. Curbing would be concrete.

Street Lighting

The street lighting system, see Plate 9, would consist of street lights like those shown in the above-mentioned plate, located every 150'. This distance would provide sufficient light to enable one to safely use the sidewalks at night. It would also discourage prowlers, and still not be of such light intensity as to become obnoxious to the residents. It might be mentioned here that all electric utility lines, both those serving street lights and those serving the homes, would be carried in underground conduits located along easily accessible property lines, and streets, which would make servicing or repairs easy.

Playground

The playground would be graded and designed as shown in Plates 2 and 3, however, the stream-course would be diverted as shown in the above plates, to provide enough ground for the baseball diamond. The stream's water would be conducted into a large underground tile pipe and would come back into the original stream-bed slightly below the playground.

Picnic Area

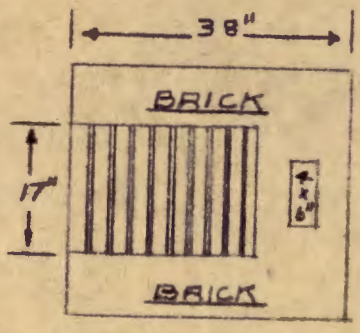
The picnic areas were designed to have only moderately-sized fireplaces and picnic tables, keeping within bounds of the needs of the community, which is not in its true sense a public park. The tables and fireplaces would be of simple construction, see Plate 8, yet would serve the needs of the people living in this community.

Dam

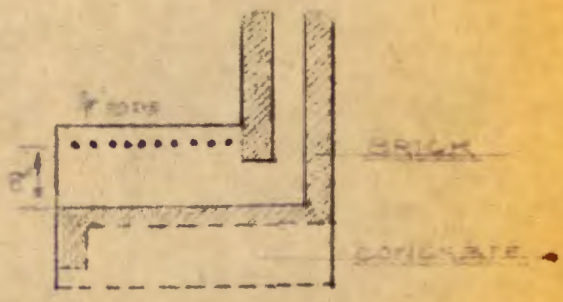
The dam, see Plate 10, would be constructed of concrete, with large boulders up to 3 by 5' protruding to give a naturalistic waterfall effect. Since the pond would be largely an excavated one, the fall of the dam would be only five to six feet.

Plate 8

PLAN SHOWING PICNIC AREA



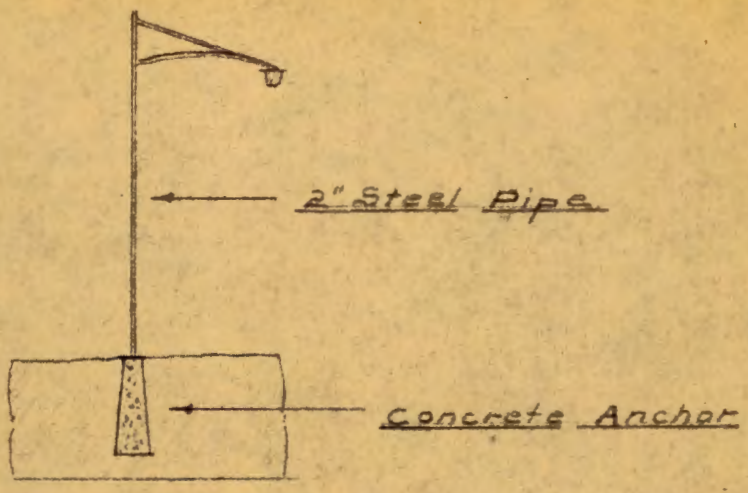
TOP VIEW OF FIREPLACE



SIDE VIEW OF FIREPLACE

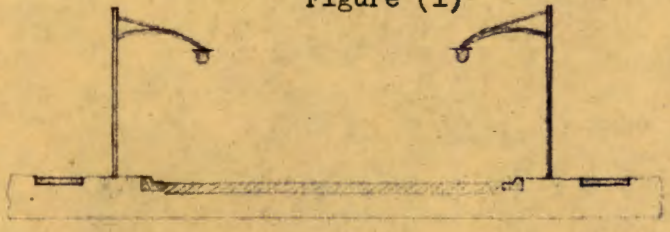
PERSPECTIVE

Plate 9 PLAN SHOWING DEVELOPMENT OF STREET LIGHTING



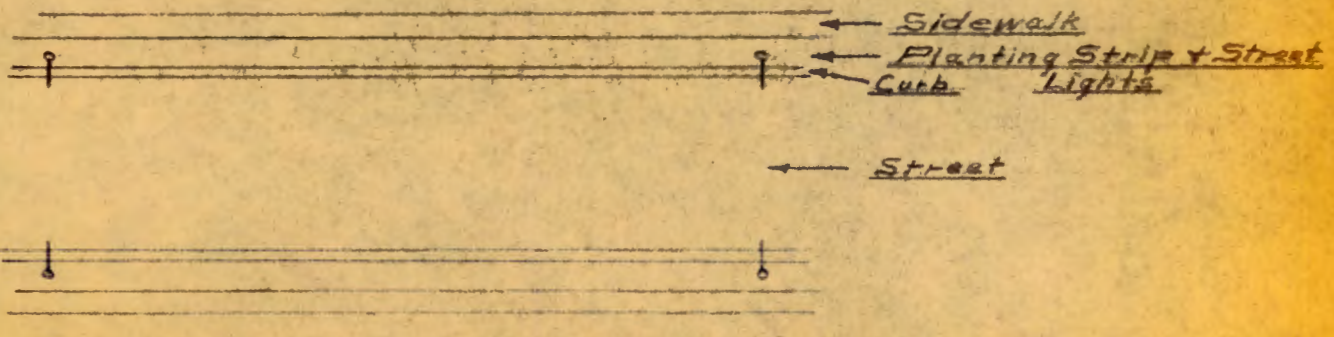
STREET LIGHT
Scale 1"=10'

Figure (1)



END VIEW OF STREET
Scale 1"=20'

Figure (2)



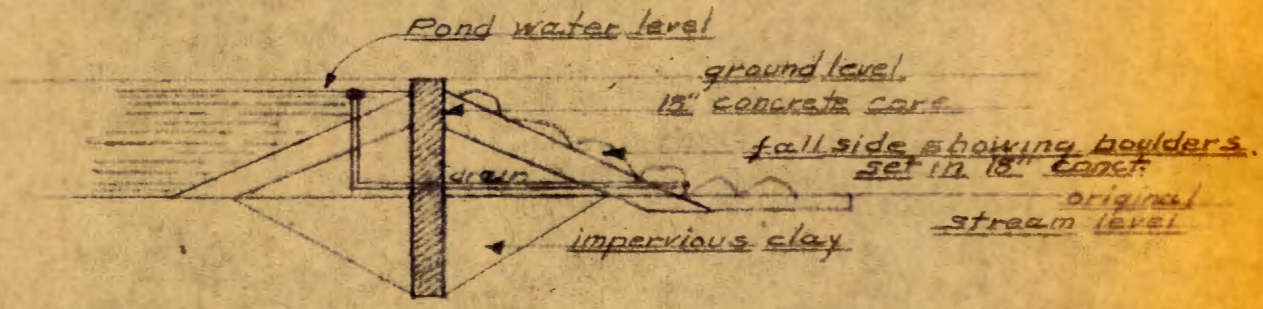
STREET PLAN SHOWING LOCATION OF STREET LIGHTS
Scale 1"=40'

Figure (3)

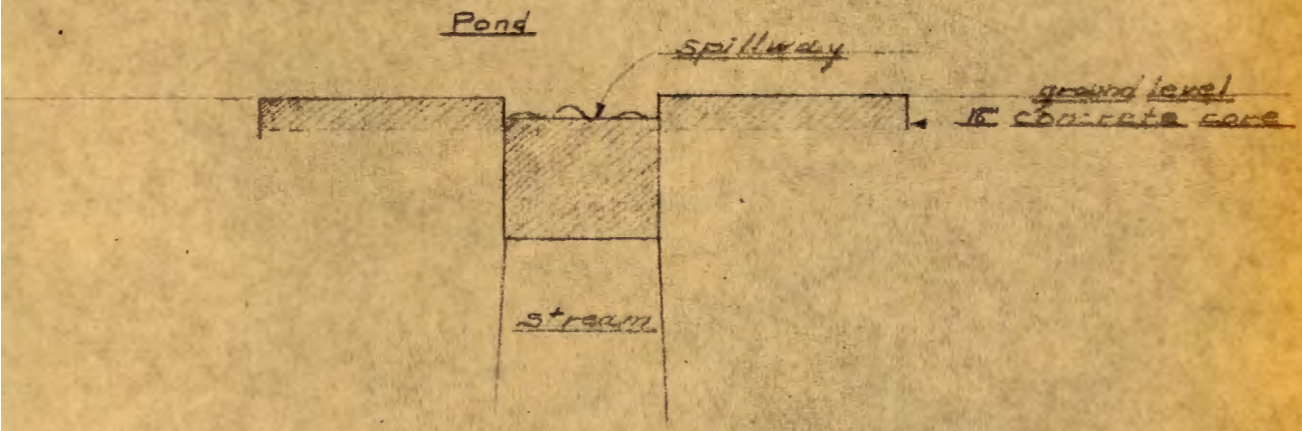
Plate 10

PLAN SHOWING DAM CONSTRUCTION

scale 1"=10'



CROSS-SECTION VIEW



FRONT VIEW SHOWING SPILLWAY

PLANTING DESIGN

Introduction

The landscape design places a final touch on the over-all aesthetic design of the community. "Landscaping," quoting Eckbo (1946), "is essential to neighborhood planning because, as a part of the physical environments, it is on an equal footing with building arrangement, architecture, roads, and utilities. Its primary duty is to relate these refinements to the unimproved terrain; to create harmony between man-made structures, earth, rock, water and plants."

Unity and simplicity of design encompassing the whole site and dividing it into a series of related garden spots, lending an atmosphere of individuality to the entire community, was the primary objective of the landscape design of Draper's Meadows. In general, the configurations of the residential properties were the same. Plant materials were selected for usefulness, beauty, individuality, adaptability, and permanence. Many of the plants selected are indigenous to this particular type of environment, while others have shown the ability to adapt themselves to the extent of being able to carry on nearly normal growth. Plants were selected, for the most part, from groups of plants which are used most in contemporary design. The plant

families, ERICACEAE, PINACEAE, and ROSACEAE, including mostly broadleaf evergreen, coniferous evergreen, and evergreens and deciduous plants, provided a bulk of the plant material.

Plate 15 shows the general landscape design for the community. Small shrubs and plantings will be explained in more detail in other plates and subsequent parts of the thesis. The landscape design for Draper's Meadows embodies many of the landscape principles adhered to by such famous landscape designers as Bottomley, Church, and Eckbo.

Typical Property

Treatments of representative properties are shown in Plates 11, 12, 13, and 14. In general, a property is broken up by plantings into spatial areas which satisfy the owner's need for parking, gardening, service, and private areas. Capital letters represent symbols for these types of plantings in their respective relationships as follows:

A. Accent plants

B. Foundation plantings

C. Hedges

D. Mass plantings

E. Coniferous and deciduous trees

F. Screen plantings

Grouping of the different plants is shown on the last pages of this section. Many of the plants (example Tsuga canadensis) can serve well in several different groupings provided they are kept within the bounds of the requirements of certain specific groups by clipping or pruning, or are allowed to grow normally into trees or shrubs. The service area would contain such features as clothes lines and garbage cans along with the other service features. On most properties, the parking areas are large enough to provide a play area for children, after cars are removed or driven into the garage. Badminton and other games such as volley ball could be played in the parking area. A garden site would be optional, with the property owner making a final decision as to whether or not he would indulge in that sort of activity. Development of private areas would be centered on the terrace and picture-window walls. Screening is either continuous around this area, or a portion of the green plant wall is left open. A group of foliage plants, which may be used to decorate the interior of a residence, is contained in the plant list.

Plate 11

PLAN SHOWING LANDSCAPE DESIGN FOR LOT

Scale 1"=25'

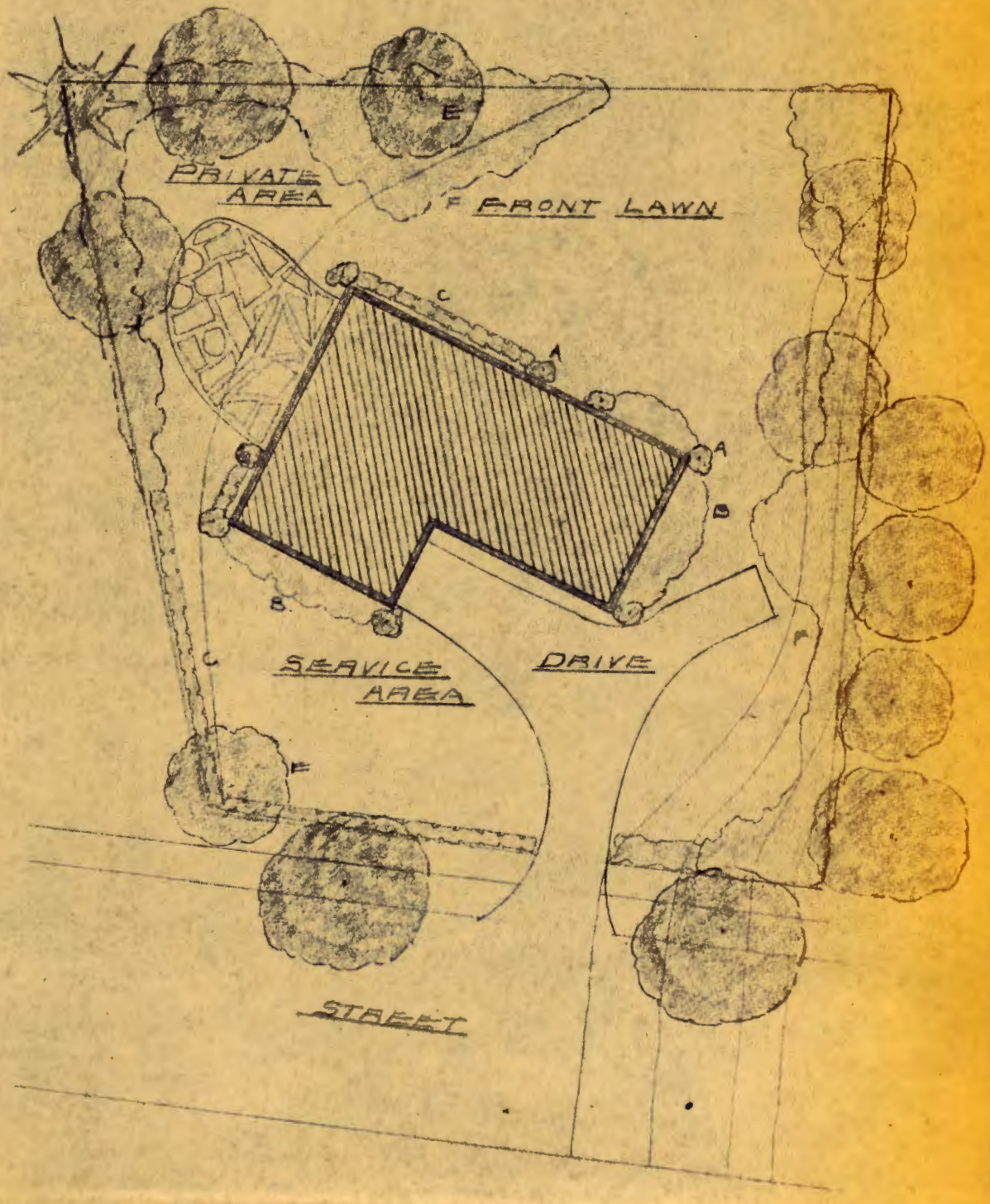


Plate 12

PLAN SHOWING LANDSCAPE DESIGN FOR LOT

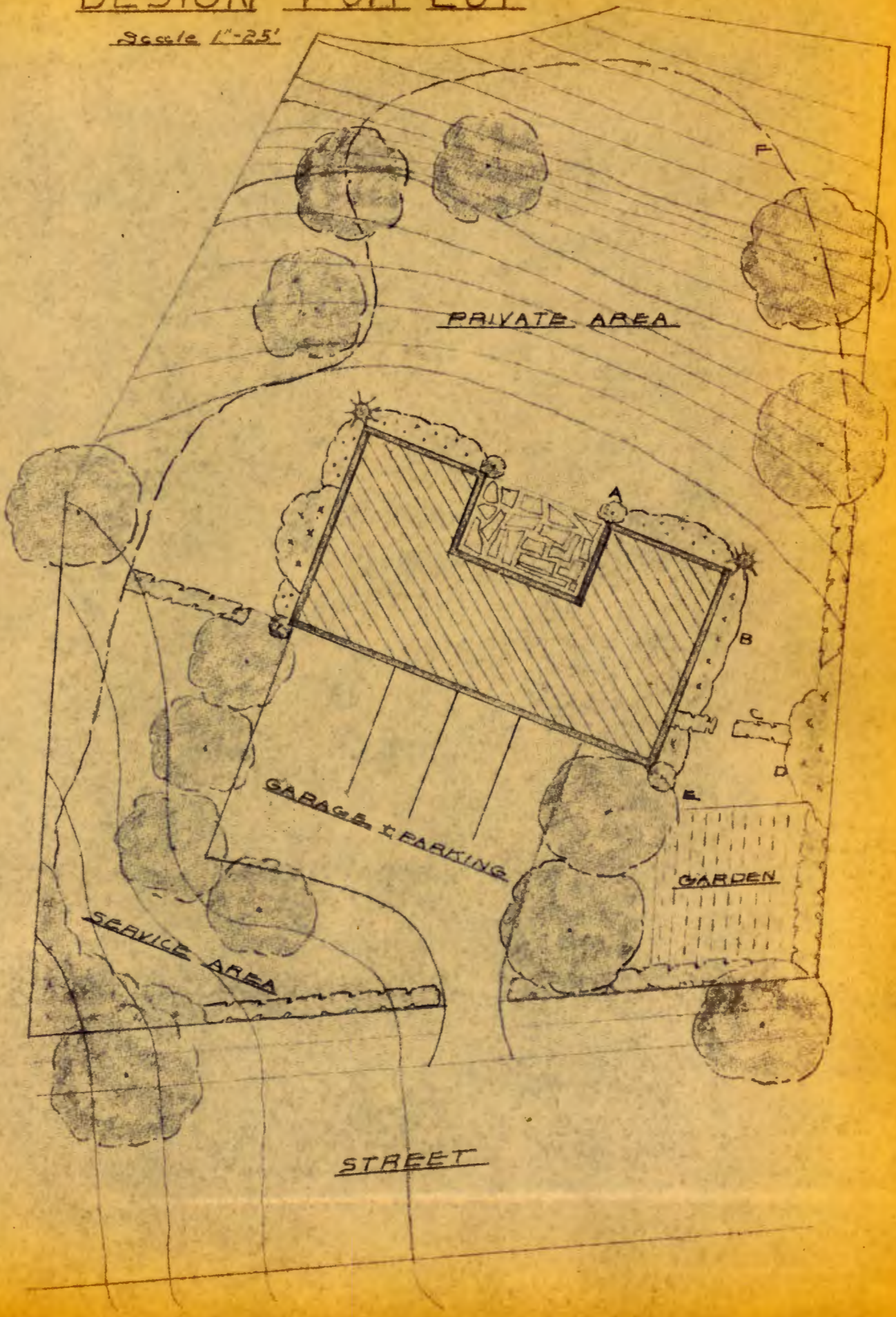


Plate 13

PLAN SHOWING LANDSCAPE DESIGN FOR LOT

Scale 1"-25'

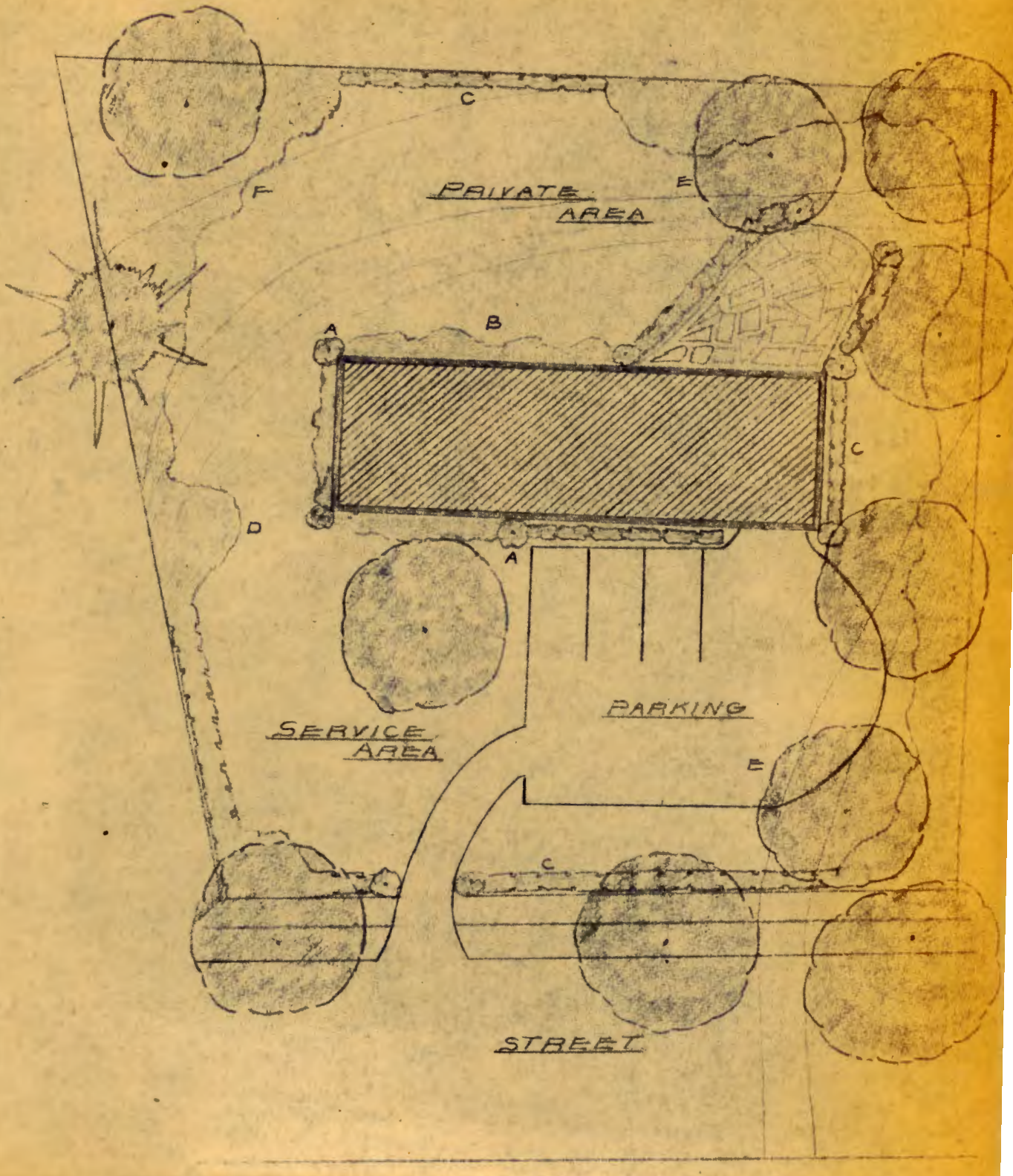
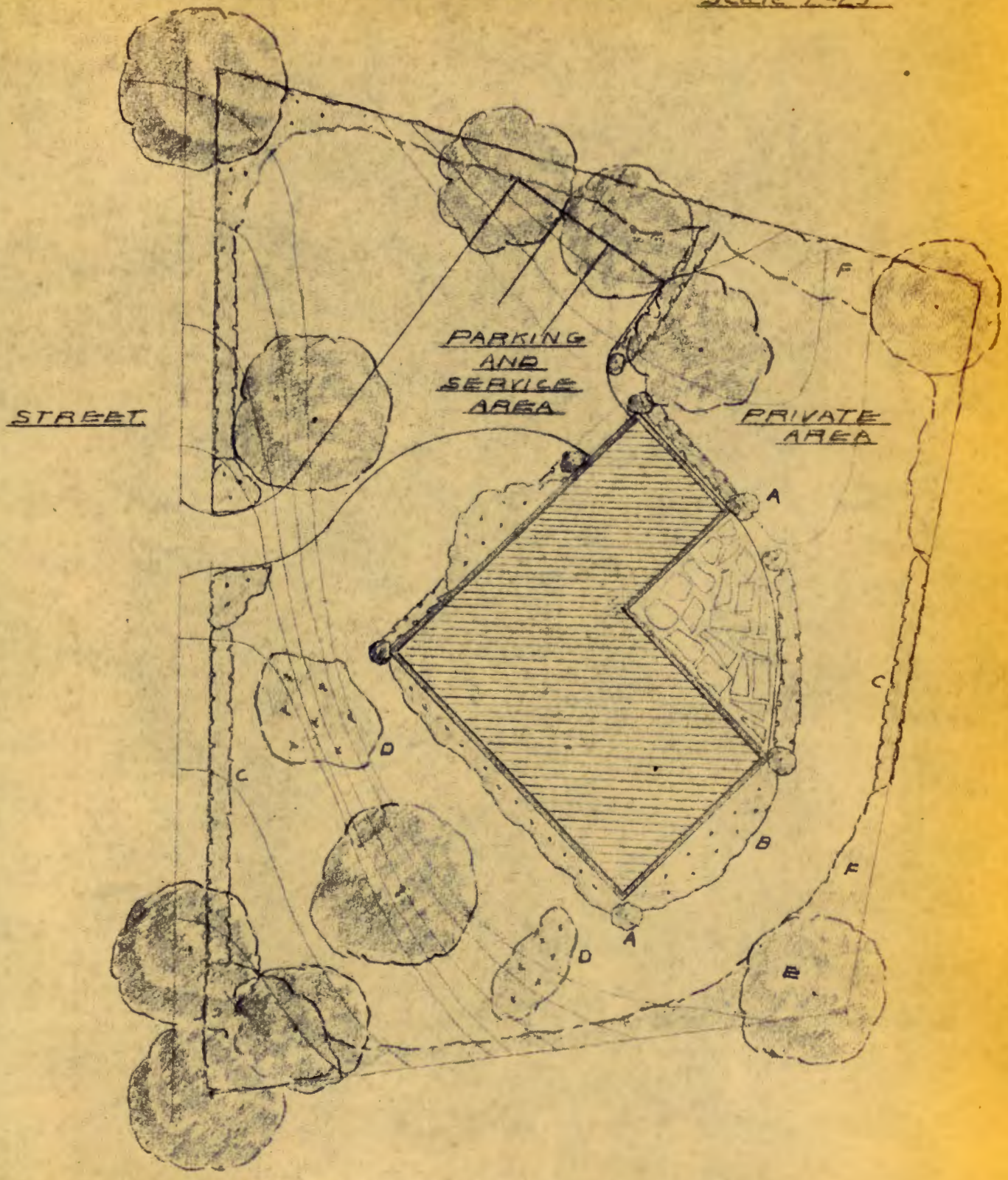


Plate 14

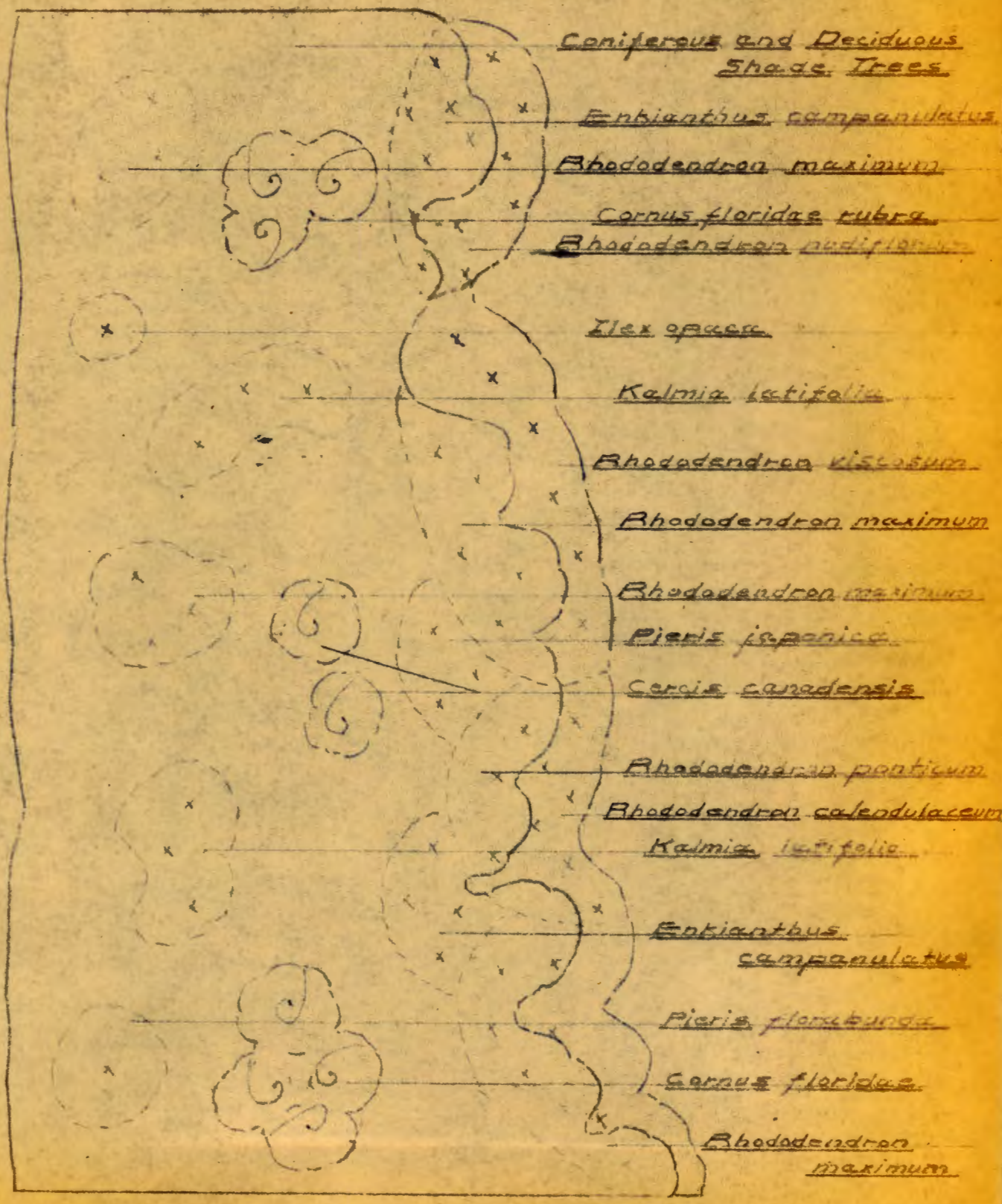
PLAN SHOWING LANDSCAPE DESIGN FOR LOT

Scale 1"-25'



SECTIONAL PLAN SHOWING TYPE OF PLANTING IN PARK

Scale 1"=10'



Park and Playground

The park and playground have been designed as a series of related open spaces bounded on all sides by tree plantings of conifers and shade trees. See Plate 15. Under the canopy provided by the tree plantings, an ericaceous border extends around the park and playground, broken only in certain spots to afford view to and from the residential properties. Meandering paths and nature trails under a canopy of shade trees, would "minister to the needs of our leisure." Trees which adapt themselves readily to a moist habitat, see plant list, were mainly concentrated in plantings along the stream and around the pond. A list, see plant list, of the trees chosen for planting in the park (maples were excluded because of their tendency to affect ericaceous plantings) was worked out, for the most part, from trees that are indigenous to this region. See also Plate 16, showing a representative sectional ericaceous planting.

Community Center

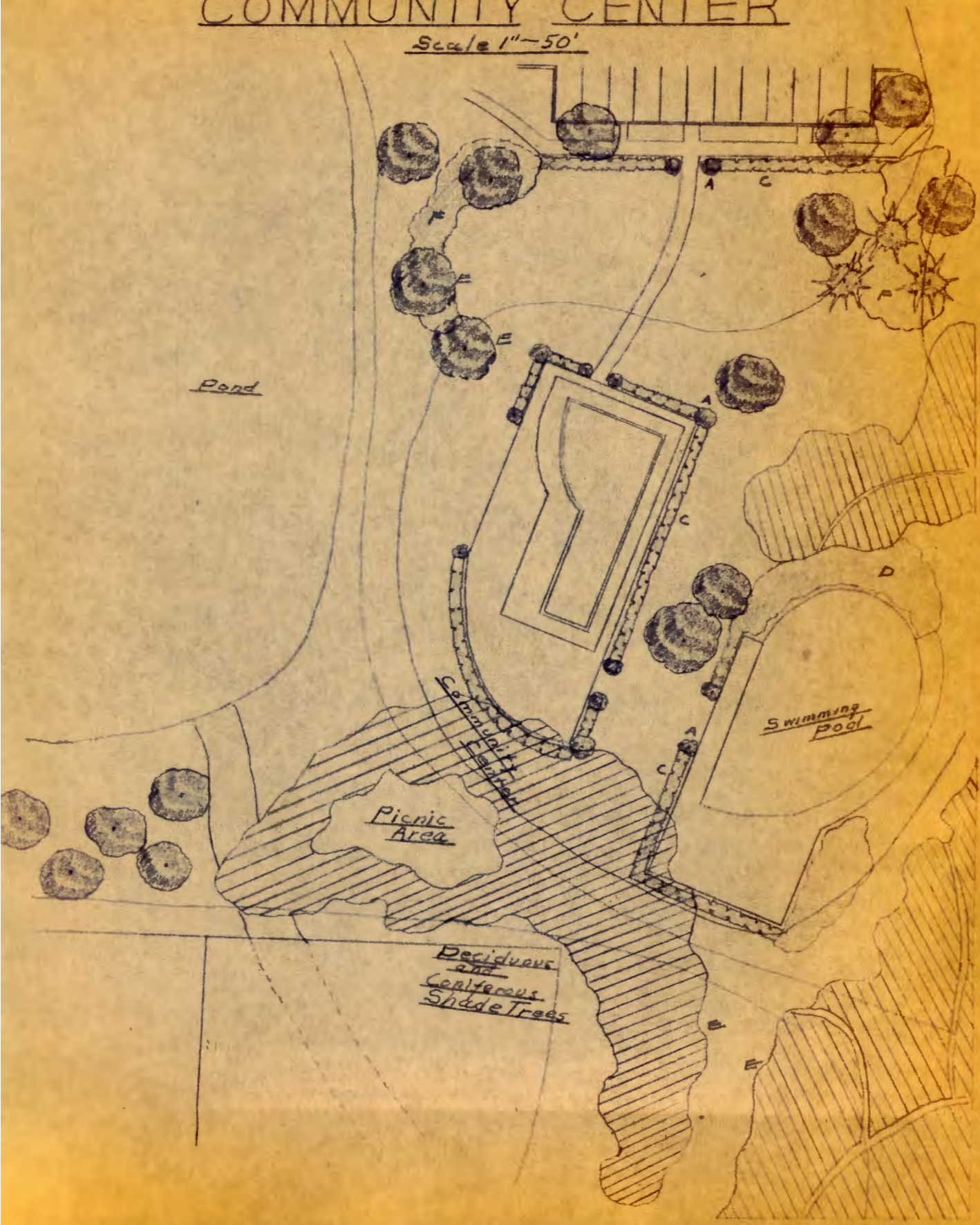
Plantings around the community center would consist largely of accent plants with a broad, rounded habit of growth such as large boxwoods or round-leaf Japanese hollies. Hedges would connect these plants. See Plate 17. The swimming pool would be partially screened from the community center by the use of hedges and mass plantings. The swimming pool would, however, have a concrete terrace for sun-bathers and spectators. The letters representing different types of plantings refer to those groups of plants set aside in the plant list.

Other Areas

The planting strip between the street and the sidewalk would have tree plantings like those shown on Plate 15. The trees would be located in informal, irregular groups rather than in formal lines. This method of planting in groups has a decided advantage over line plantings. If by chance a tree is destroyed in a line planting, the aesthetic effect is marred for the total planting. This is not true in informal group plantings, which retain their informal beauty and grace even after certain ones of them are destroyed.

Plate 17

PLAN SHOWING LAND-SCAPE DESIGN AROUND COMMUNITY CENTER



Planting

Shade trees would be at least ten feet tall, and should be planted in late fall or early spring, bare-root or balled and burlapped. For the first few years five to ten oz. of acid forming fertilizer would be sufficient for the trees, applied during the late spring or early summer. A sawdust mulch of three to five inches would tend to hold moisture in the ground and prevent the growth of obnoxious weeds. Mulching trees could be discontinued after they are established. Guy wires should be attached to the trees for the first year.

The evergreens should be balled and burlapped and planted in holes four to five inches wider than the circumference of the balled plant. Depth of planting should be regulated by the height of the ball; the top surface of the ball should be level with the original ground surface. Ericaceous plants should be planted in beds of humus-soil or peat-soil with a pH reaction of 4.5 to 5. Three to four oz. of acid forming azalea-camellia fertilizer should be provided to each plant, increasing the dosage by perhaps an oz. per year, depending on the ultimate size of the plant. The application, however, should not exceed a rate of over two to three pounds per 100 square feet. It would be advantageous to use a sawdust mulch on all the shrub plantings.

Deciduous shrubs could be either balled or bare-root, depending on their particular natures. The method of planting them would be essentially the same as that mentioned above.

Maintenance

A review of the plant list enables one to realize that many of those plants in informal naturalistic plantings such as ones used in the park and on residential properties in this community design would require practically no maintenance, except for an occasional fertilizer application. Other plantings such as accent or hedges would probably require an annual pruning, shearing, or clipping to enable them to persist in a more or less dwarfed form. A possible method for solving the park-playground maintenance problem would be that of collecting a community fund, a portion of which would also be used to bear the expense of other incidentals.

Plant Material

Selection and Grouping of Plant Materials for Use in Landscaping the residences and the Community Center

A. ACCENT PLANTS

Buxus sempervirens	American Boxwood
Ilex cornuta	Chinese Holly
Ilex cornuta burfordi	Burford Holly
Ilex crenata	Japanese Holly
Ilex crenata rotundifolia	Round-leaf Jap. Holly
Picea abies conica	Dwarf Spruce
Taxus cuspidata capitata	Upright Yew
Taxus media hicksi	Upright Hick's Yew

B. FOUNDATION PLANTS

Abelia grandiflora	Abelia
Aucuba japonica and vars.	Aucuba
Berberis julianae	Wintergreen Barberry
Berberis thunbergi minor	Thunberg's Barberry
Buxus sempervirens	American Boxwood
Buxus microphylla	Japanese Boxwood
Enkianthus campanulatus	Enkianthus
Hypericum species	St. John's-Wart
Ilex cassine	Swamp Holly

Ilex ciliospinosa	Chinese Holly
Ilex cornuta rotunda	Dwarf Cornuta Holly
Ilex crenata convexa	Box-leaf Japanese Holly
Ilex crenata helleri	Dwarf Japanese Holly
Ilex crenata repandens	Weeping Japanese Holly
Ilex glabra	Inkberry
Ilex latifolia	Chinese Holly
Ilex pernyi	Perny's Holly
Ilex vomitoria	Cassina Holly
Nandina domestica	Nandina
Pieris floribunda	Mountain Fetterbush
Pieris japonica	Japanese Pieris
Pinus mugo mughus	Mugo Pine
Prunus laurocerasus nana	Dwarf Laurel
Prunus lauro. officinalis	English Laurel
Prunus lauro. schipkaensis	Schipka Laurel
Prunus lauro. zabeliana	Strap-leaf Laurel
Rhododendron catawbiense	Rhododendron
Rhododendron maximum	Rosebay
Rhododendron obtusum amoenum	Rhododendron
Rhododendron viscosum	Rhododendron
Taxus baccata repandens	Dwarf English Yew
Taxus media hicksi	Upright Hick's Yew
Taxus cuspidata nana	Dwarf Spreading Yew

C. LOW HEDGES

Abelia grandiflora	Abelia
Berberis thunbergi atropurpura	Red Barberry
Buxus sempervirens suffruticosa	Dwarf English Boxwood
Buxus microphylla	Japanese Boxwood
Ilex crenata rotundifolia	Round-leaf Japanese Holly
Ilex vomitoria	Cassina Holly
Taxus media hicksi	Upright Hick's Yew

MEDIUM HEDGES

Buxus sempervirens	American Boxwood
Ilex cornuta	Chinese Holly
Ilex cornuta burfordi	Burford Holly
Ilex opaca	American Holly
Ilex vomitoria	Cassina Holly
Tsuga canadensis	Canadian Hemlock
Tsuga caroliniana	Carolina Hemlock
Taxus cuspidata	Spreading Yew
Taxus cuspidata capitata	Upright Yew
Taxus media hicksi	Upright Hick's Yew

TALL HEDGES OR WINDBREAKS

Picea abies	Norway Spruce
Picea glauca	White Spruce
Pinus strobus	White Pine
Prunus laurocerasus vars.	Laurel

Tsuga canadensis	Canadian Hemlock
Tsuga caroliniana	Carolina Hemlock

D. MASS PLANTINGS

Aucuba japonica vars.	Aucuba
Buxus sempervirens	American Boxwood
Buxus sempervirens suffruticosa	English Dwarf-Boxwood
Ilex cornuta	Chinese Holly
Ilex opaca	American Holly
Ilex pernyi	Perny's Holly
Pieris floribunda	Mountain Fetterbush
Pieris japonica	Japanese Pieris
Prunus laurocerasus vars.	Laurel
Rhododendron maximum	Rosebay

E. CONIFEROUS AND DECIDUOUS TREES FOR USE IN THE PLANTING STRIPS AND ON THE RESIDENTIAL LOTS

Coniferous:

Cedrus deodara	Deodar Cedar
Cunninghamia lanceolata	Cunningham Fir
Picea abies	Norway Spruce
Picea glauca	White Spruce
Picea pungens	Blue Spruce
Pinus strobus	White Pine
Tsuga canadensis	Canadian Hemlock

Deciduous:

Acer platanoides	Norway Maple
Acer rubrum	Red Maple
Acer saccharum	Sugar Maple
Fraxinus americana	American Ash
Fagus grandiflora	American Beech
Ginkgo biloba	Maidenhair Tree
Liquidamber straciflua	Sweet Gum
Quercus alba	White Oak
Quercus palustris	Pin Oak
Salyx babylonica	Weeping Willow
Tilia americana	American Linden
Ulmus americana	American Elm

F. SCREEN PLANTINGS

Buddleia dubonnet	Butterfly Bush
Chaenomeles japonica	Japanese Quince
Cornus florida	White Dogwood
Deutzia gracilis	Deutzia
Forsythia intermedia spectabilis	Goldenbells
Forsythia suspensa	Weeping Goldenbells
Hamamelis virginia	Witch-Hazel
Ilex cornuta	Chinese Holly
Ilex opaca	American Holly

Jasminum nudiflorum	February Jasmine
Kolwitizia amabilis	Beautybush
Philadelphus virginalis	Virginal Mockorange
Pinus strobus	White Pine
Rhododendron Species	Rhododendron
Spirea thunbergi	Spirea
Syringa vulgaris	Lilac
Tsuga canadensis	Canadian Hemlock
Viburnum opulus sterile	Viburnum
Weigelia rosea	Red Weigelia
Weigelia hybrida Mt. Blanc	White Weigelia

A Group of Foliage Plants Selected for Use within the Residences

Asparagus plumosus	Asparagus Fern
Asparagus sprengeri	Emerald Feather
Crassula argentea	Jade Plant
Dieffenbachia picta	Dumb Cane
Ficus pumila	Climbing Fig
Hedera helix	English Ivy
Helxine soleiroli	Baby Tears
Kalanchoe pinnata	Air Plant
Pandanus utilis	Screw Pine
Parthenocissus tricuspidata	Boston Ivy
Philodendron cordatum	Philodendron
Polystichum tsus-simense	Holly Fern
Sansevieria species	Snake Plant

Coniferous and Deciduous Trees for the Park

I. CONIFEROUS TREES

Cedrus deodara	Deodar Cedar
Picea abies	Norway Spruce
Pinus strobus	White Pine
Sequoa sempervirens	Redwood
Tsuga canadensis	Canadian Hemlock

II. DECIDUOUS TREES

Fagus grandiflora	American Beech
Liquidamber styraciflua	Sweet Gum
Lirodendron tulipifera	Poplar
Quercus alba	White Oak
Tilia americana	American Linden
Ulmus americana	American Elm

Coniferous and Deciduous Trees for Plantings Along the Pond and Creek

I. CONIFEROUS TREES

Taxodium distichum	Bald Cypress
Tsuga canadensis	Canadian Hemlock

II. DECIDUCUS TREES

Acer saccharum	Sugar Maple
Fagus grandiflora	American Beech
Fraxinius americana	American Ash
Platanus occidentalis	Sycamore
Salyx babylonica	Weeping Willow

Small-flowering Trees for Park

Chicanthus virginica	Virginia Fringe-tree
Cercis canadensis	Redbud
Cornus florida	White Dogwood
Cornus florida rubra	Pink Dogwood
Magnolia stellata	Star Magnolia
Malus atrosanguinea	Carmine Crab
Prunus kwanzan	Flowering Cherry

Shrubs for Park

Enkianthus campanulatus	Enkianthus
Leucothoe catesbaei	Leucothoe
Kalmia latifolia	Mountain Laurel
Pieris florabunda	Mountain Fetterbush
Pieris japonica	Japanese Pieris
Rhododendron species	Rhododendron

CONCLUSIONS

While the fact is acknowledged that this design of Draper's Meadows is only one solution of the many that could be presented for such a problem, it probably does not embody any of the following faults so realistically portrayed in many of our American community developments: ugly, monotonous, and lacking in individuality; wasteful and dangerous street patterns; lack of play spaces, encouraging children to play in streets; no focus provided for community life; inadequate park or open spaces; and narrow lots with contiguously spaced houses, along with inadequate parking spaces and areas.

The design of Draper's Meadows has provided a solution for each of these common community faults, while at the same time beautifying the whole through unification of the community plan with the landscape design. A plan for rendering all of the properties spatial areas usable has been provided by relocating the residences from the traditional design of having a beautified but unused front yard. While this sort of residence location has been suggested and actually put into practice by certain architects, as far as the writer has been able to ascertain, this is the first time such a treatment has been applied to a development so large as a community.

Since this is purely a design thesis, no consideration has been given to the actual cost of such a development as the drawings

embodied in this paper represent. While at the same time, it is realized that working drawings would have to be provided by architexts and construction engineers in addition to those design drawings presented in this thesis. It is, however, realized that this design, as it stands, would only be in economic reach of the higher classes of society. Yet, with some modification the general principles of this design can be adapted to fit almost any community of this size, if the terrain is of the same gently rolling nature or flat.

The selection of a group of more or less permanent plant material, planted in a naturalistic design, would lessen the maintenance problem of a park-playground system or a residential property, giving a community a sort of uniqueness which would persist for a long period of time, because of the long, useful life-span of the permanent type of plants.

SUMMARY

A resume of this thesis shows its main objective to be the design of Draper's Meadows, a community designed and landscaped for living, to provide additional housing for some members of the faculty of Virginia Polytechnic Institute, Blacksburg, Virginia.

A review of literature dealing with community design from the 1860's to the present time, was made.

A preliminary survey of the site was made, and data taken in this survey was used to make a topographic map which served as a base map for accurately projecting subsequent drawings.

A general consideration of the environment and physical condition of the site along with a discussion of its historical significance, and a review of the methods of attacking the problem of community design, present the reader with an introduction to the thesis.

The body of the thesis consists of three main sections: "Design of Community," "Construction Details," and "Landscape Design." Drawings related to these topics are included and frequently referred to and explained in these sections. All of the design is of a contemporary nature, stressing simplicity and beauty along with unity and individuality.

It is concluded that the design does embody some new principles which could be adaptable to other community situations,

while at the same time providing a solution to the design of a community at Draper's Meadows.

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ABSTRACT

A resume of this thesis shows its main objective to be the design of Draper's Meadows, a community designed and landscaped for living, to provide additional housing for some members of the faculty of Virginia Polytechnic Institute, Blacksburg, Virginia.

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A preliminary survey of the site was made, and data taken in this survey was used to make a topographic map which served as a base map for accurately projecting subsequent drawings.

A general consideration of the environment and physical condition of the site along with a discussion of its historical significance, and a review of the methods of attacking the problem of community design, present the reader with an introduction to the thesis.

The body of the thesis consists of three main sections: "Design of Community," "Construction Details," and "Landscape Design." Drawings related to these topics are included and frequently referred to and explained in these sections. All of the design is of a contemporary nature, stressing simplicity and beauty along with unity and individuality.

It is concluded that the design does embody some new principles which could be adaptable to other community situations,

while at the same time providing a solution to the design of a community at Draper's Meadows.

N

155°

88°

TO HIGHWAY

TELEPHONE LINE

94°

177'

MARSH

POWER LINE

172'

ROCK OUTCROPPING

227'

232'

217'

212'

227'

222'

217'

212'

207'

202'

197'

192'

187'

182'

177'

172

167

162'

157'

152'

172

111°

92°
TO SMITHFIELD

PLATE I

SCALE OF FEET 0 50 100 200

TOPOGRAPHIC MAP

SCALE 1" = 100'

JULY 1951

AREA = 1,608,387 SQ. FT. OR 36.9 ACRES

Highway

Parking Area

Artificial Pond

Community Centre

Swimming Pool

Tennis Court

Tennis Court

Street

Baseball and Football

Childrens Playground

Street

Parking

Residence

PLATE 2

PLAN SHOWING
COMMUNITY DEVELOPMENT
Scale 1"=50'

PLATE 3

TOPOGRAPHIC MAP SHOWING REVISED CONTOURS

Scale 1"=50'

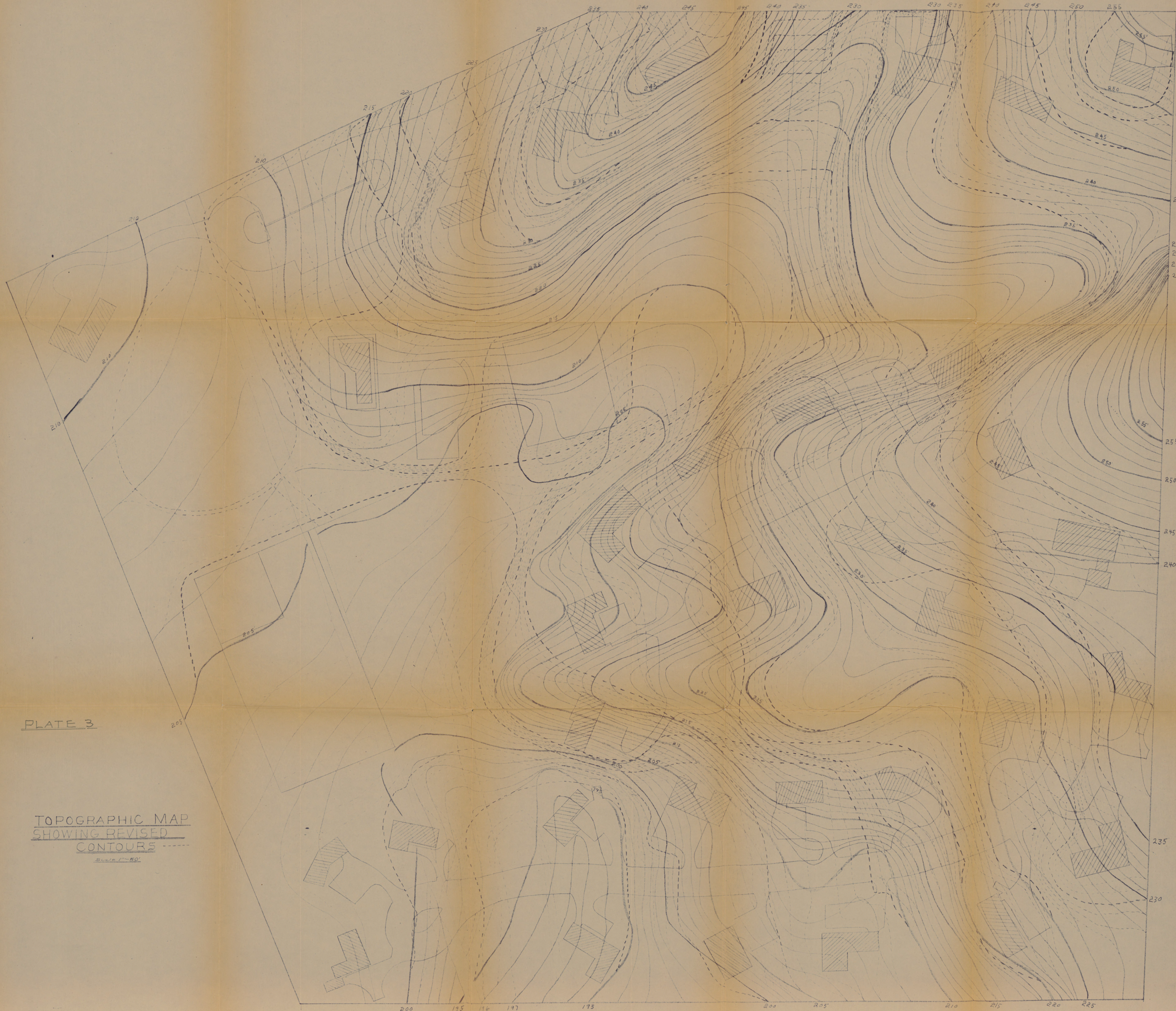

PLATE 6

PLAN SHOWING CATCH-BASINS + DRAINAGE

Scale 1"=50'

main drain

secondary or branch drain

catch-basin

Pond

Community House

Baseball and Football

Park Area

Park Area

Children's Playground

PLATE 15

PLAN SHOWING GENERAL LANDSCAPE DESIGN FOR COMMUNITY, PARK, AND PLAYGROUND

Scale 1"=50'

Draper's Meadows
A
Proposed Community
for
Blacksburg, Virginia