



An analysis of the Bozeman city park system and suggested developmental plans for four new parks
by Alan Chester Epps

A thesis submitted to the Graduate Faculty in partial fulfillment of the requirements for the degree of
MASTER OF SCIENCE in HORTICULTURE

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Abstract:

It was the purpose of this study to take a realistic look at Bozeman's city park system and to design developmental plans for those, new park areas which are needed and warrant the expenditure of large sums of capital for development.

In order to do this it was necessary to analyze existing parks and recreational facilities in relation to undeveloped park lands and recreational needs. Selected park sites were then drawn at large scales from which final developmental designs could be prepared. The completed plans were photographed and reduced in size for use in this thesis.

Plant materials utilized in the developmental designs were selected for their hardiness, form, period of display and ease of maintenance.

The suggested construction materials were chosen for design emphasis. In designing developmental plans for the new areas, consideration was given to: overall public use, development at a minimum cost without sacrificing aesthetics and locally available materials.

Each selected undeveloped park area is discussed in relation to the overall park system. If Bozeman is to remain a desirable place to live, the city administrators must develop a more realistic policy for accepting land for park development in order that the needs of the future may be met.

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Alan Chester Epps

Date

7/1/69

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ALAN CHESTER EPPS 441

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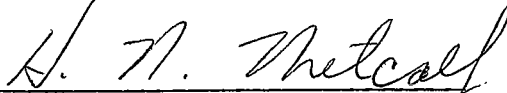
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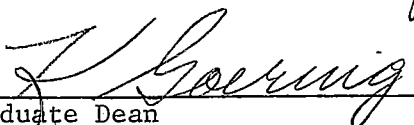
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ABSTRACT

It was the purpose of this study to take a realistic look at Bozeman's city park system and to design developmental plans for those new park areas which are needed and warrant the expenditure of large sums of capital for development.

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INTRODUCTION

Parks should provide recreation for all age groups and categories of people living in a community. Bozeman's existing park system has lagged in providing adequate facilities, since the city has grown rapidly during the last decade. The present population and expansion of Bozeman indicates a number of specific locations and facilities which would enhance the city's overall beauty and service to both the resident and visitor.

It was not the intention of the author to undertake planning for all undeveloped park lands owned by the city of Bozeman. Instead, each area selected for study was analyzed in relation to existing park facilities and feasibility of development.

Terrain, climate, and needed recreational facilities were molded into a rational and economically possible scheme. Preparation of designs was carried out with aesthetic values, recreational facilities, plant material compatibility and the relationship of the park to surrounding properties as primary guides to development.

LITERATURE REVIEW

Landscaping is a nebulous term with the end result dependent upon the viewer's own likes and dislikes, which have been learned from his sociological background. Litton (18) defines landscaping as that particular art through which man molds nature to his functional, aesthetic and psychological liking. Even though unsupported by scientific data, Ammann (1) indicates further that the character of a landscape, a garden, a tree or a shrub is a thing distinct and apart from its natural physiognomy. Beyond all style and character the physiognomical and physiological harmonization of the architect's "construct" with the organic forms and needs of the surrounding landscape and of the inhabiting life is the greatest accomplishment of all.

Landscaping, according to Wright (31), has been practiced since earliest historic times and perhaps before. Mumford (22) feels gardening developed in the prehistoric period when people congregated and formed communities.

Changes in forms or styles of landscaping have reflected changes in the various cultures from which they originated. In designing landscapes, the designer must exercise taste and discretion in selecting elements suited to the way of life and the existing climate. The designer must rely on his own knowledge and experience and not on the academic symbolism of the styles or the outworn systems of aesthetics, in order to create by experiment and invention new forms which are significant of the age from which they spring (29).

Japanese gardening has long been associated with the Japanese culture.

Harada (15) indicates that the placement of plants and rocks in Japanese gardens has spiritual meaning in reference to their religion. According to Tono (28), Japanese gardens are intended to break the connection with the outside world, so to speak, and to produce a fresh sensation conducive to full enjoyment of the aestheticism of nature. The rest of the world does not ascribe as much symbolism to landscaping as do the Japanese, but as Lees (17) states, alone, plants do not make a landscape.

In recent years, as reported by Eckbo (9), there has been a trend toward designing landscapes for living; and not just for beauty. This has been achieved by relating the scale of the composition to people and striving for harmony with the site. Or, as the editors of *Sunset Magazine* (11) suggest, landscaping offers a way to take building materials and plant materials, the open sky and the stars at night, and blend them all to create a deeply satisfying space for everyday living.

The site and its physical features, as Lynch (19) points out, are important in developing a good landscape design. Topography, exposure, and soil structure play an important role in analyzing a site so that the physical environment can be utilized for the best land usage. Shephard (27) emphasizes that it is an absolute necessity to have a thorough knowledge of the site and plant materials in order to develop a good landscape. With this knowledge one can then incorporate Baumann's (2) theory of design which states that everything should appear to grow spontaneously, with no part of the landscape isolated. This is achieved by using both native and cultivated plant materials which harmonize with the area and

the site in such a manner as to create unity. Ramsey (24) feels that we must think of beauty, not as it is expressed in the individual things alone, but in relation to all things about it.

Plant forms, in and of themselves, can add to a landscape design, according to Rose (26). The color or variety of plants used in a design is less important than the relationship of one plant or group to other plants or groups. Daniels (6) states that there should be a reason for every plant's presence and every plant's placement. In general, planting arrangements should be simple, effective and dignified. Grant and Grant (13) point out that the most important considerations for proper use of plants relate to their scale, texture, color, accent and uniformity. However, Dawson (7) is of the opinion that, in the long run, shape is more important and more enduring.

Grosby (14) is of the opinion that a garden of several acres is an independent unit in which the planner wrestles with only natural physical conditions. However, as one looks to the future, one must consider the views of such men as Tunnard (30) who indicates that the garden of tomorrow will not be the hedged, personal, half-acre of today; but a unit of broad green landscape itself, controlled for the benefit of all. Further, the new garden art must submit itself to the demands of society and fulfill with efficiency an active role in the physical and mental development of the individual and the community. Urban development must incorporate the idea of gardens into the scheme for the future.

Doell (8) refers to parks as a piece of land or water set aside for

the recreation of the people. More specifically, Eckbo (9) defines parks as considerable areas of open space, organized primarily by landscape means, for the recreation, both active and passive, of the general public.

The idea of incorporating gardens (parks) as part of towns is not new. Doell (8) states, parks are as old as human history. Ancient parks were, in general, private estates for the pleasure of nobility. He further indicates that the first parks were the hunting parks of the king, the prince, the noble, and constituted the ancestors of today's zoological gardens. The market place, the town plaza, and the agora were also ancestors of today's parks since this is where the common people of the times gathered.

The history of the public park, according to Crowe (5), goes back to ancient Greece, where the city of Athens set aside certain open spaces for the enjoyment of the populace. However, it was not until the 1800's that the public park became the norm. Development of the industrial revolution in northern Europe during the nineteenth century created a pressing need for municipal parks in which the over-crowded townspeople could "get away from it all". Crowe (5) indicates that in 1845, Joseph Paxton, at Birkenhead, England, laid out the first specifically municipal park on an expanse of waste land. The British commons, which were the playgrounds of the common people of England, were introduced into America by early European settlers. According to Doell (8), Boston Common, established in 1640, is often called our first park. It was in 1858, when Olmstead and Vaux were entrusted with the development of Central Park in New York, that

municipal parks in America actually came into existence.

Chadwick (4) suggests that Andrew Jackson Downing extended great influence on early American park design through his beliefs that the floral and arboricultural riches of all climates united in the same scene give a richness and a variety which can never be found in any one portion of nature.

Downing developed the original layout of the Capitol grounds in Washington, D.C., and was a very strong advocate of community planning for park location. Chadwick (4) indicates that one of the most vital contributions to city planning was the complete system of parks in Boston, which was developed by Olmstead and Vaux.

Public responsibility for the active play of the general populace and later for the whole range of recreational activities came over a period of thirty to forty years at the beginning of the twentieth century (8). Burnap (3) and Crowe (5) suggest a two-fold purpose for town parks: visual pleasure and physical recreation. The success of a park system depends upon how far these two ideals can be combined. Litton (18) indicates that the happiness and contentment of people living in an urban area can be maintained if our parks are made functional and beautiful and the programs carried out within their borders made creative and productive.

It is important that parks and the purposes for which they were designed be related to the over-all park system of which they are a part (8). The park must have a relationship by location to the area which it serves and to schools, streets and highways. Further consideration must

be given to present and proposed land use in the area, population analysis, including trends of growth, age groups, ethnic groups, and the age of buildings and structures. Using this information, a park of any given size can be categorized into one of Eckbo's (9) four classifications: 1) small, from one to five acres, 2) medium, from five to fifty acres, 3) large, from fifty to two hundred acres and 4) reserves over two hundred acres. Doell (8) classifies parks in a slightly different way: 1) neighborhood parks of ten acres, more or less, 2) community play fields of twenty acres, more or less, and 3) large city parks of one hundred acres or more.

Neighborhood parks are, in general, our most common form of park. Jacobs (16) expresses the view that, conventionally, neighborhood parks or parklike open spaces are considered boons conferred upon the deprived populations of cities, while in actuality we should consider city parks to be deprived places that need the boon of life and appreciation conferred upon them. He feels that, in reality, people do use parks and make them successes, or they withhold use and doom them to rejection and failure.

Although the author has stated previously that landscape design often reflects the designer's personal likes and dislikes, there are some basic considerations that must be taken into account when developing areas such as public parks. Crowe (5) points out that the scale of parks is that of the crowd, and this breadth of treatment should be carried through the design. As Doell (8) indicates, it should be kept in mind that recreational functioning in both neighborhood and community play fields is para-

mount to topographical and horticultural features, some of which have to be sacrificed to permit good operation. Chadwick (4) reiterates some of the views of two early park designers, Lancelot Brown and Humphrey Rupton. Brown was the first to advocate artificial designs to attain a naturalistic appearance. Rupton suggested one should attempt the happy medium betwixt the wildness of nature and the stiffness of formal art, and further, that in whatever relates to man, propriety and convenience are not less objects of good taste than picturesque effect.

Jacobs (16) expresses the view that good small parks typically have a place somewhere within them commonly understood to be the center--at least a main crossroads and pausing point--a climax. He states further that for neighborhood parks, the finest centers are stage settings for people and that sun is a part of a park's setting for people, shaded, to be sure, in the summer. Doell (8) believes that large auto parking lots ought to be so placed as to serve more than one purpose if at all possible.

Raymore and Ortloff (25) point out that there is no reason why recreation areas should not be attractive as well as useful. They feel childrens' playgrounds need to be more than fenced-in concrete platforms, ball field grandstands need not be ugly, though they usually are, and all sorts of recreation facilities, from the simplest to the most elaborate, can just as easily be made more attractive and add to civic beauty.

Litton (18) points out that more and more leisure time places greater responsibility on the administrators of parks and recreational facilities to provide a dynamic program for the constructive use of people's free

time. Raymore and Ortloff (25) indicate that as communities continue to expand, vacant lots and other open spaces for free play disappear, and parents realize that if children are to develop into well-rounded personalities they must have safe, well-equipped play areas. They emphasize that it has been fairly well established that the delinquency rate increases as the distance from a playground or park increases. They do not say that parks can cure delinquency, but that they can help mightily to reduce it.

Parks are a place for recreational pursuits and can be a form of recreation in themselves. The following analysis of the Bozeman city park system and the development of new park areas takes the theories contained in this literature review into consideration.

MATERIALS AND METHODS

Outline maps of all new park areas owned by the city of Bozeman, Montana, as of June, 1967, were copied on tracing vellum from city masters in the City Engineer's Office. These maps were redrawn on 36x24 inch drawing paper at scales of 50 or 100 feet to the inch. Designation of scales on the maps was three times that at which they were drawn in order for the proper scale to appear in the thesis plates, since photographing and reduction (by three times) was needed to conform to standard page size.

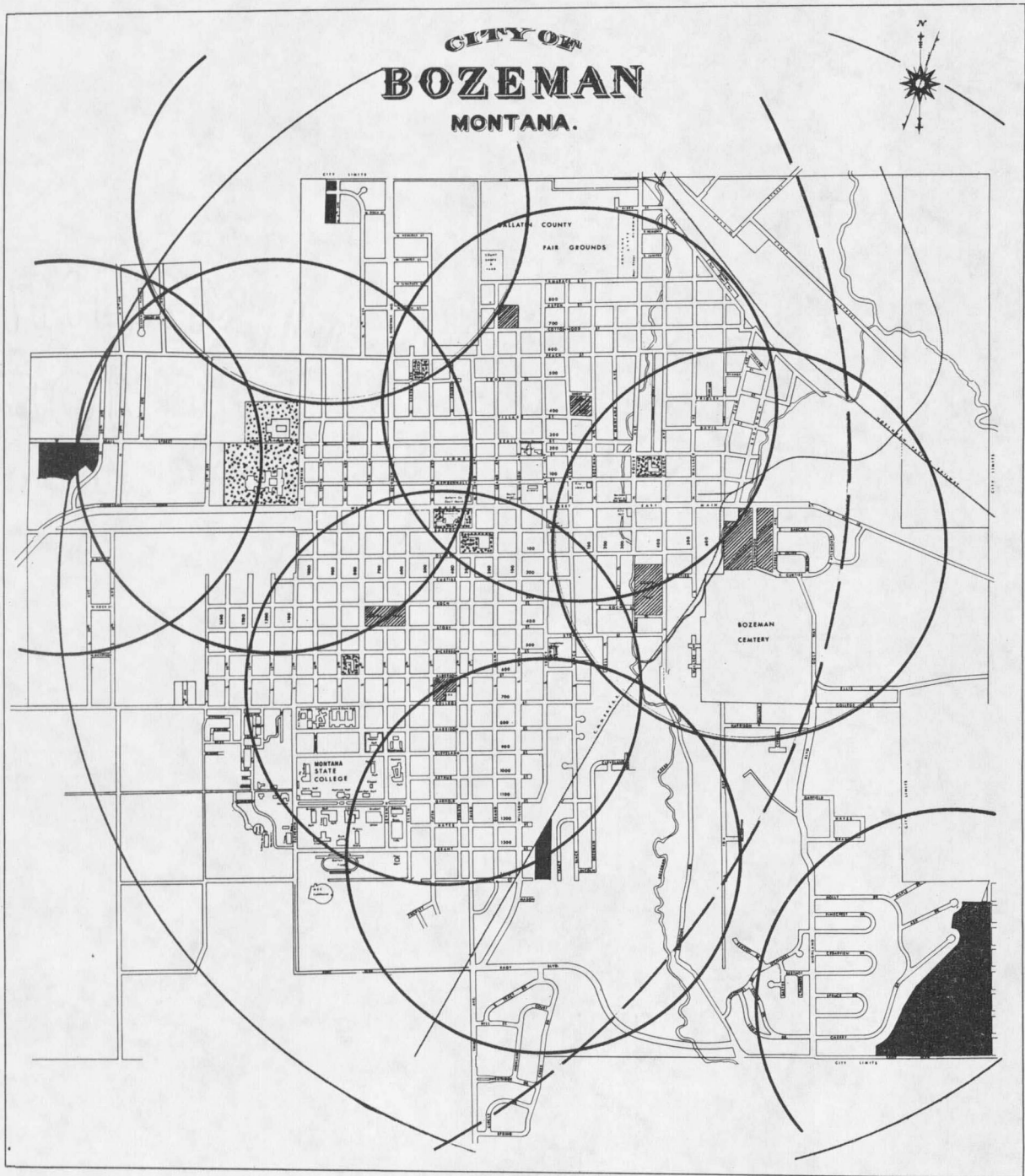
Several city maps of Bozeman were acquired at the City Hall on which relative location of existing and proposed city parks could be plotted and analyzed (Fig. 1) according to standards set forth by George Nez (Table I), Director of the Inter-County Regional Planning Commission of Denver, Colorado, in "The Urban Pattern" (12).

In some places building materials have been suggested for the purpose of complementing plant materials used in the area. Hard surfacing materials have been indicated in several places since they constitute an element of over-all park design.

Designation of plants is by code number corresponding to numbers in the Key of Plant Materials on each map, listing the scientific names of the plants used. Annual and perennial flowers are indicated by the term "flowers" where they have been designed for additional color in the parks.

Plants utilized in the developmental designs (Tables II, III, & IV) were selected with regard to their size, shape, hardiness, drought resistance and season of interest. Plants used are rated hardy in hardiness zones

FIGURE 1



I, II, and III with a few from zone IV when they are known to be hardy in Bozeman (31,32,34,35,36).

Table I. Size And Radii Of Area Served For Ideal Park Distribution (after Nez [12])

Type of Area	Acres Per 1,000 Population	Size Of Site (acres)		Radius Of Area Served (miles)
		Ideal	Minimum	
Playgrounds	1.5	4	2	0.5
Neighborhood Parks	2.0	10	5	0.5
Playfields	1.0	15	10	1.5
Community Parks	3.5	100	40	2.0
District Parks	2.0	500- 1000	varies	10.0

Table II. Trees Used In Developmental Plans For Selected Bozeman Parks

Scientific Name *	Common Name *	Zone	Height
<i>Abies concolor</i>	Concolor Fir	4	120'
<i>Acer platanoides</i>	Norway Maple	3	90'
<i>Acer platanoides</i> 'Schwedleri'	Schwedler Norway Maple	2	90'
<i>Acer platanoides</i> <i>veriegatum</i>	Harlequin Norway Maple	3	90'
<i>Aesculus x carnea</i> 'Briotii'	Ruby Horse Chestnut	3	75'
<i>Alnus tenuifolia</i>	Rocky Mountain Alder	2	30'
<i>Betula papyrifera</i>	Paper Birch	2	90'
<i>Betula verrucosa</i> 'Gracilis'	Cutleaf Weeping European White Birch	2	60'
<i>Caragana arborescens</i> 'Sutherland'	Sutherland Caragana	2	15'
<i>Elaeagnus angustifolia</i>	Russian-olive	2	20'
<i>Gleditsia triacanthos</i> 'Sunburst'	Sunburst Honeylocust	4	135'
<i>Malus</i> sp. **	Crabapple	2-4	20-50'
<i>Picea glauca</i>	White Spruce	2	80'
<i>Picea pungens</i> 'Glauca Koster'	Koster Blue Colorado Spruce	2	100'

Table II. Continued

Scientific Name *	Common Name *	Zone	Height
<i>Pinus flexilis</i>	Limber Pine	4	60'
<i>Pinus ponderosa</i>	Ponderosa Pine	4	170'
<i>Pinus sylvestris</i>	Scots Pine	2	75'
<i>Populus tremuloides</i>	Quaking Aspen	1	90'
<i>Rhus typhina</i>	Staghorn Sumac	3	30'
<i>Robinia pseudoacacia</i> 'Pyramidalis'	Fastigate Black Locust	3	60'
<i>Sorbus aucuparia</i>	European Mountain Ash	2	45'
<i>Sorbus scopulina</i>	Greene's Mountain Ash	2	20'
<i>Syringa amurensis</i> var. <i>japonica</i>	Japanese Tree Lilac	3	25'
<i>Tilia cordata</i>	Littleleaf Linden	3	90'
<i>Ulmus pumila</i> 'Dropmore'	Dropmore Siberian Elm	2	120'

* (20)

** Cultivars to be selected by the Gallatin Empire Garden Club.

Table III. Shrubs Used In Developmental Plans For Selected Bozeman Parks

Scientific Name *	Common Name *	Zone	Height
<i>Caragana arborescens</i> 'Sutherland'	Sutherland Caragana	2	25'
<i>Juniperus chinensis</i> 'Pfitzeriana Aurea'	Golden Juniper Pfitzer	3	6'
<i>Juniperus chinensis</i> 'Pfitzeriana Glauca'	Blue Pfitzer Juniper	3	6'
<i>Mahonia repens</i>	Creeping Mahonia	5	10"
<i>Salix</i> sp.	Native Willow	1	15'

* (20)

Table IV. Dwarf Evergreens Used In The South Tracy Avenue Park

Scientific Name *	Common Name *	Zone	Height
Juniperus squamata 'Loberi'	Loberi Juniper	4	4'
Juniperus squamata var. meyeri	Meyeri Juniper	4	6'
Picea abies 'Pumila'	Pumila Dwarf Norway Spruce	2	5'

* (20)

RESULTS AND DISCUSSION

Results of preliminary observations indicated three important factors which should determine present development of the Bozeman city park system. 1) Distribution of existing parks throughout the city is good. 2) Southside, Beall and Bogart parks provide intensive recreational use through ice skating and swimming facilities. 3) In general, many of the undeveloped park lands owned by the city are small, inaccessible to the general public, and would be costly to maintain.

With these three factors in mind, four undeveloped parks were selected which are large enough for possible development, which would fulfill the need for parks in newer areas of Bozeman, and which could provide a number of community services now unavailable to Bozeman residents and visitors. The four parks selected are North Ninth Area (2.2 acres), South Tracy Avenue Area (6.3 acres), West Main Area (11.5 acres) and Hyalite Area (14.3 acres of existing city land, plus 40.0 acres of potentially available land). Specific reasons for the selection of these four parks will be given as each park is discussed in regard to the over-all city park system and in relation to its proposed development.

Three important considerations should be pointed out, however. 1) The two new special purpose parks are in opposite corners of Bozeman. 2) The tourist-oriented parks are situated in a manner which should increase commerce. 3) The development of some of the existing parkland is uneconomical. It is suggested that the city either lease or sell the land back to the housing developments involved and use the increased revenues for development of the more desirable parklands and to purchase additional

areas.

North Ninth Area

The North Ninth Area (Fig. 2) is situated two blocks west of North Seventh Avenue, within three or four blocks of the U.S. 10 Interstate interchange. Expedient acquisition of access to this area could create a desirable service facility for visitors to Bozeman, while at the same time providing park facilities for residents of the neighborhood.

At the present time the area is being used as horse pasture. The groundcover consists of native grasses intermixed with herbaceous annuals and perennials. A small perennial creek bisects the area from south to north with native willows growing along its banks. Continuation of North Eighth Avenue would separate approximately one-sixth of the area at the north end from the remaining area. Construction of a culvert to carry the creek water and some leveling would allow development of recreational facilities in this area. A hard surface area large enough for two tennis courts in combination with two basketball courts could be developed on the western portion. The eastern part could be utilized as a tot lot, with a planting of 'Sutherland' Caragana providing a screen from the hard surface area. 'Sutherland' Caragana is suggested because of its narrow columnar habit which would require very little, if any, pruning to maintain a good screen. Two Norway Maples in the tot lot would provide shade in the summer and allow insolation in the winter when they lose their leaves. Russian olives were used around the court area and the larger part of the park to create unity between the two sections. Also, because

