بسم الله الرحمن الرحيم

HOSSAM MAGHRABY

شبكة المعلومات الجامعية

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التوثيق الالكتروني والميكروفيلم

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REHABILITATION OF RESIDENTIAL AREAS THROUGH SUCCESSFUL EMPLOYEMENT OF LANDSCAPE IN URBAN OPEN SPACES

By

Eng. BASANT HASSAN ABD EL AZIZ MOHAMED

A Thesis Submitted to the
Faculty of Engineering at Cairo University
in Partial Fulfillment of the
Requirements for the Degree of
MASTER OF SCIENCE
in
URBAN DEVELOPMENT AND COMMUNITIES DESIGN

FACULITY OF ENGINEERING, CAIRO UNIVERSITY
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Abstract:

Due to the crowdedness of cities lately, the care for the residential open spaces decreases although these spaces are considered a respiratory for residents and a place for many social interactions. The landscape is considered one of the important elements in designing of open space, so it was imperative to study it through proper scientific bases and design it according to the standard rates which depend on various kinds of spaces and their users.

Based on this the study came to focus on the considerations and the criteria of landscape designing and employment as there are many deficiencies in most cases of open spaces and to try to avoid them in the future.

Also, residential open spaces in new communities will be studied as they are a characteristic of these residential areas.

The research structure is as follows:

Chapter one: Urban renewal capabilities of residential areas

This chapter starts with a study of greater Cairo main problems due to the great population growth which leads in turn to, population density increase, squatter settlements spread, and utility services supply lack leading to deterioration of many residential neighborhoods into blights and slums.

This status requires the interference of urban renewal tools; as conservation in areas with few deficiencies to prevent them turning into blights, rehabilitation to put existing areas of development back into a worthwhile state and redevelopment to demolish "slum" and construct standard quality housing.

The study goes on to show why rehabilitation is preferred to redevelopment in treating the problems of residential areas. As redevelopment reduces housing stock and it has a long lag between demolition and new construction process which leads to dissatisfaction of residents, while rehabilitation avoids the decline in housing stock and preserves the community structure (no relocation), beside that redevelopment costs much more than rehabilitation.

Problems that face rehabilitation process are then illustrated; as dispersed ownership of properties, so all owners must agree to rehabilitate, as rehabilitation of some properties in the area wouldn't improve it. The bad environmental conditions we live

in; as crowded traffic, pollution, lack of laws and their enforcement, and the residents utilize their money only to satisfy themselves, mainly on interior maintenance not on open spaces or outdoor areas.

The study then, suggested some ideas to make the rehabilitation process workable as code enforcement to impose penalties on those who don't rehabilitate, the supervision of specialized local authority on the process, citizen participation in the process through office site to test residents' opinion and provide the necessary funds.

Chapter two: Residential areas' open spaces

This chapter starts with analyzing the residential areas' qualities which satisfy human needs; as orientation of open spaces and units to receive sun when it is wanted (winter) and avoid it when it isn't wanted (summer), to receive gentle summer breeze, and to face interesting views. As well as, providing privacy in units and open spaces to avoid over viewing and problems with neighbors, giving residential areas their identity through housing type, landscape, and street pattern, providing accessibility to all parts of the housing environment and open space amenities, achieving territoriality by establishment of physical boundary lines, and convenience by the physical ease in progressing daily activities in space, and safety from vandalism.

The study goes on to define the open space as voids which are open to view and classify them according to ownership, hierarchy and size. Then it illustrates the role of open spaces in residential areas; as recreational space, so it should be located based on population densities and serves a wide range of recreational interests' regardless of age and sex, as a place for social interaction so as to be with others as a source of inspiration and stimulating experience, and as a place for children to play near home safe from traffic and crime danger.

Follows an analysis of residential open spaces elements; as street, pedestrian routes, cul-de- sac, squares, parking areas, and access their types and design considerations.

This chapter then explains the residential open spaces qualities, which are allocation of open spaces according to available land and existing spaces, open spaces ability to accommodate all users in spite of their difference in gender, age and socioeconomic status, open spaces' sensitivity to human senses; as sight, hearing, and smelling. As

well as open spaces scale and carrying capacity according to users' numbers and activity intensity, open spaces safety from crime, weather conditions and traffic danger, and providing space enclosure by vegetation, landform, structures or water in the three planes which also enables the definition and separation of spaces and their related human activities. Also open space visual attractiveness so as space parts are identifiable but with surprise, diversity, and contrast to break monotony.

Chapter three: Residential areas open spaces landscape analysis

This chapter starts with analyzing plants' classification according to visual qualities, species, growth habits, and foliage with explanation of characteristics and usage of each type.

Then it analyzes the three corners of planting design which are: selection according to the desired function, plant's size and form, arrangement so as to develop beautiful solutions for the practical problems, and maintenance with suggestions to decrease maintenance effort.

The chapter goes on to analyze the constructed features of landscape (hard landscape) which are: surfacing, seats, sculpture, fountains, signs, shades, walls, fences, and play equipments, their characteristics and design considerations.

Chapter four: Landscape in rehabilitated residential areas open space

This chapter starts with analyzing the potential functional contribution of landscape in space's development which includes; firstly climatic control uses, as we can use plants and constructed screens to direct wind towards space (in summer) and away from space (in winter), control solar radiation by shading trees, water cooling, shades, and green cover absorption for heat, and control precipitation by plants through roots holding water in the ground.

Secondly environmental engineering uses, as we can use landscape to control erosion and control air pollution through plants absorption to pollutant particles and releasing pure oxygen in the photosynthesis process. It can control noise by acting as buffers of

loud sounds, control glare by plants blocking reflected light and control traffic by minimizing crashing effect of running automobiles and directing drivers.

Thirdly architectural and aesthetic uses, as we can use landscape to define the space by forming wall, ground, and ceiling plane; creating backgrounds or focal points for a space. It can also be used to screen negative views, provide privacy for spaces, direct users along paths, change space apparent size either by reduction or by enlargement, and add a sense of visual unity to the space.

An illustration follows of the steps of using landscape in rehabilitation process firstly prepare preplanning considerations as objectives, site conditions, and development limitations. Secondly, develop a preliminary plan by determining landscape functional requirements, developing concepts, and selecting landscape materials. Thirdly developing final plan and documents and preparing for implementation and finally completing the process by landscape inspection and evaluation.

It explains the criteria for successful employment of landscape in residential areas rehabilitation; by achieving harmony between architecture and landscape, providing necessary financial funds and maintenance, installing landscape with the proper sequence, allocating space ownership to someone or to some group (so as to determine its responsibility), protecting landscape elements from vandalism by their proper selections to suit the space and the users

Chapter five: The applied study cases

This chapter starts with the case study goals and constrains which determined the selected study cases; "Dream land City", "6th October City", and "El Sheik Zayed City" then it illustrate the methodology which will be used.

The chapter goes on to analyze different elements of landscape in the selected cases spaces, how they are arrangement and whether they succeed to perform their expected role (climatic, environmental, and architectural) with a comparison among the three cases showing their negative and positive aspects.