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DEPARTMENT OF HOUSING
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OPERATION BREAKTHROUGH SITE PLANNING INDIANAPOLIS, INDIANA

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OPERATION BREAKTHROUGH

site planning - indianapolis, indiana

task 4 final report

submitted to:

DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT

november 1972

skidmore, owings & merrill, urban designers/site planners/architects/engineers
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operation breakthrough summary

In January, 1970, the Department of Housing and Urban Development selected a publicly-owned 120-acre undeveloped site on the outskirts of Indianapolis as one of 11 OPERATION BREAKTHROUGH sites throughout the country. OPERATION BREAKTHROUGH, HUD's newly devised demonstration program to break through the major obstacles to volume production and delivery of housing, has launched a series of activities aimed at constructing 300 prototype industrialized housing units on this Indianapolis site by 1971. The objective of this new housing effort is not only to examine cost savings of the industrialized housing built by the 22 Housing System Producers selected by HUD, but also to develop new and innovative site planning concepts and land use programming, better financing mechanisms, and solutions for impediments to large scale production of housing, such as restrictive zoning and building codes and inefficient use of labor forces.

This report presents the findings and conclusions of the four major phases comprising the BREAKTHROUGH program in Indianapolis. The report was prepared by a specially selected site planning team chosen by HUD to take responsibility for: overall site design; coordination of design; construction of prototype units by the Housing System Producers; formulation of a public relations and community information program; and coordination of program plans with all appropriate departments of local, state and federal governments. The Site Planning Team is comprised of three consulting firms:
Skidmore, Owings and Merrill,
Site Planners, Architects, and Engineers
Marcou, O'Leary and Associates,
Housing Mix & Marketing Analysis
Snyder, Blackburn Associates,
Architects

During the initial two phases of the program, the team examined the physical character of the

site, the nature of land use development and socioeconomic trends in areas surrounding the site. On the basis of this information, and from interviews with a broad array of persons active in government, civic, and business affairs, a preliminary land use program and conceptual site plan was prepared for review by HUD officials, Indianapolis leaders, community leaders and the site Planning Team. Following this review period the detailed site design phase was initiated and the results of that phase, the master plan, and Stage 1 site design recommendations were completed.

The site design was approved and further coordination with the developer and the Housing Producers took place. Construction documents were prepared for all aspects of the site development.

The Stage 1 community of 295 housing units and a 10-acre public park began construction in 1971 on a portion of the site. This community is available for spectators to view, and is home for the first families who live on the site. It is proposed that the balance of the master plan will be developed in a phase program, bringing the total number of units on the site to between 700 and 800. Recreation facilities have been developed initially for use by the prototype development and adjacent community.

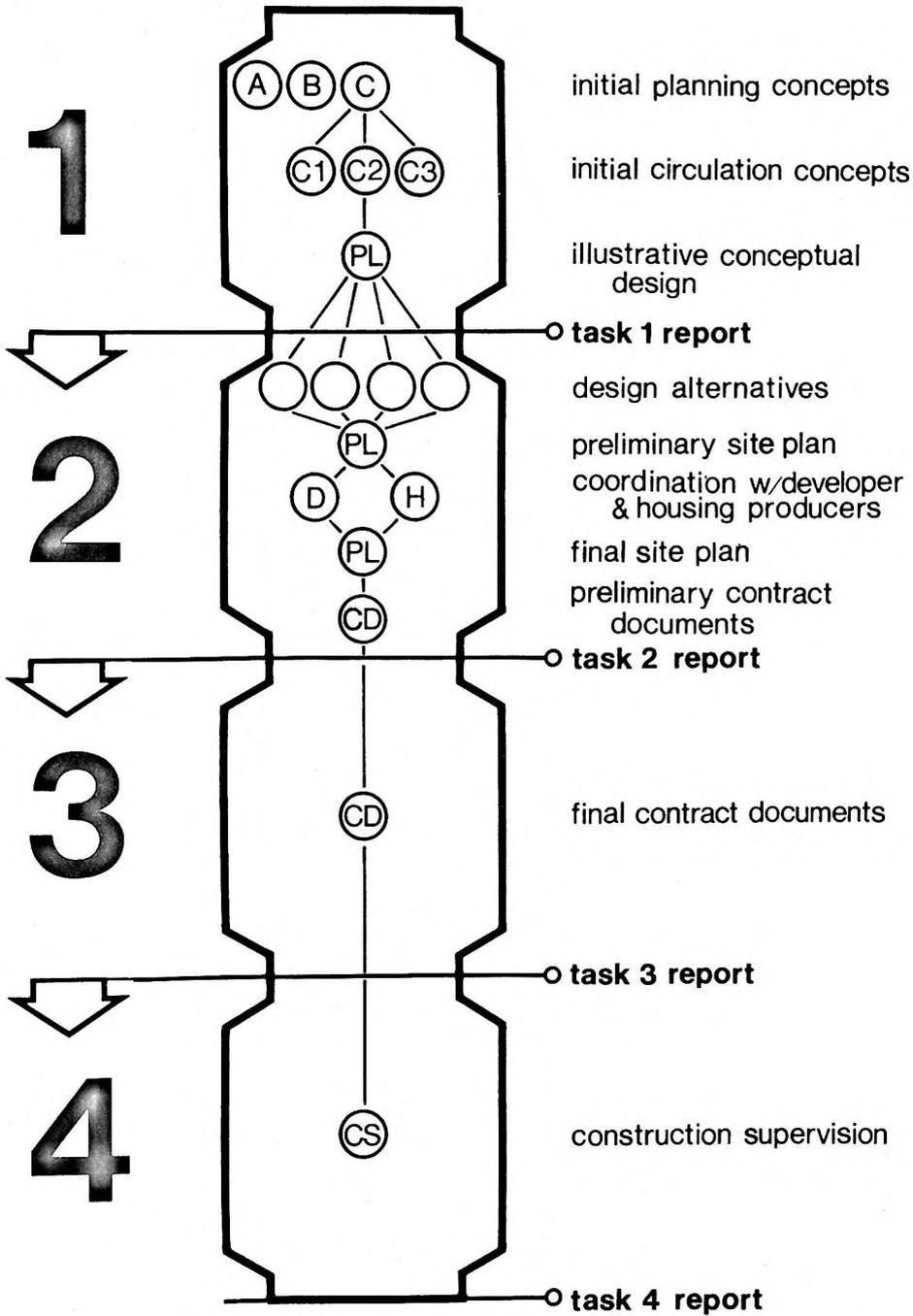
This report begins by reviewing the conclusions of the Phase 1 planning framework, design objectives and initial design concepts. A description of the overall master plan and the detailed design of the first stage of development follow. The report includes recommendations for continuation of the public relations and community information program, legal/administrative recommendations and the next steps in the development process. It concludes with a description of the final site development.

Site Aerial Photo



task

process



introduction

Site planning for OPERATION BREAKTHROUGH has presented a special challenge. Not only is the design objective of creating a unified community out of nine visually diverse housing systems immediately critical, but more important is the significance for site planning of utilizing systems building in the community context.

As housing systems become more sophisticated, flexible and responsive to marketing and user needs, a far greater design and financial emphasis can be placed on the physical and social aspects of site planning and design.

With the technical performance of a variety of housing systems tested and certified and costs stabilized through industrialized production, it will be possible to focus the major design effort and a higher percentage of total project cost on the community aspects of housing development—open space circulation, community facilities, site amenities, social responsiveness—all those elements of the urban infrastructure that create a unified, viable community.

The Site Planning Team focused on this larger challenge, and as the work proceeded, it became clear that a process which could have a significant impact on the methodology of housing development in the country was evolving.

The process focused on the growing need to consider housing developments as communities within communities, rather than merely individual "dwelling units." The need to relate a project to its surroundings in terms of planning and design has become more apparent as community and neighborhood groups have developed a greater sophistication and an increased concern regarding the effects of new development on the character of their neighborhoods. As urban problems increase and intensify, public awareness of these issues become more acute. Contributing to this concern is the relative failure and resultant stigma of "public

housing" in many areas. The result of these and other factors has been to make it a practical impossibility for developers and builders to develop housing programs in urban areas without responding to the concerns of the surrounding neighborhood and the total community.

Community issues need to be identified at the earliest stages of the project. Through interviews with community groups, leaders and individuals, the concerns can be identified and defined. These parameters then become major inputs into the design of the development. On the Indianapolis site it became clear that there were two basic community concerns to be dealt with. The first was the need for organized recreation space which was lacking in the area. Also, there was a strong desire to see the new project as one in which a home ownership program, rather than a rental program would be used. This was due to the fact that there is a large percentage of home ownership in the present community and a rental project carried the stigma of "public housing."

With community parameters and basic planning criteria in mind, design was then started on the site plan. To arrive at an initial design concept, a three dimensional graphic vocabulary was developed as a tool to explore design alternatives. With the use of the graphic vocabulary, the planning criteria and the parameters established by the community proved sufficient to develop a strong conceptual site plan. When the housing systems were applied and the plan was presented to the community, the result was a project which clearly reflected and answered their needs as well as those of the developer.

The Site Planning process was divided into four Tasks. Task I established the planning framework and initial concepts; Task II determined detailed design; Task III comprises the construction drawings and Task IV includes inspection of construction.

site planning—task 1

Initial Planning Criteria A series of planning criteria and a preliminary program of housing types and facilities were formulated by the Site Planning Team early in Task 1 to guide the preliminary planning process. These criteria and program elements were based on the overall objectives of BREAKTHROUGH as well as the Team's preliminary analyses of the Indianapolis region, the community surrounding the site, and the site itself.

- The Indianapolis site is typical of the urbanized fringe of most all major midwestern cities. These areas are generally characterized by a monotonous sprawl of low density single family homes with inefficient land use, excessive circulation area and little if any open space. As a "prototype site" a major site planning objective was to set new and more efficient patterns of land use, density distribution, circulation and open space in this specific context creating a greater variety of physical, social and economic amenities.
- Nine varied housing systems will comprise the Stage 1 construction of 300 units. The site plan must have a strong, clear, perceptible design concept to organize and order the diverse physical forms of the systems.
- The concept of total community design, placing the BREAKTHROUGH development within the context of the overall community, is a prime prerequisite. The existing community needs for open space, educational facilities, social and economic stability must be meshed with the planning requirements and the need for community facilities generated by the new housing. Schools must not be overtaxed, open space must be preserved, the physical scale and density of the existing community must be respected and the BREAKTHROUGH development must become an integral part of the overall community.
- The total 120-acre site must be planned for continuity in the development staging. The Stage I development must be clearly a part of the total master plan, but yet be complete in itself at any point in time. A visitor center must provide for viewing during the entire development process.

Initial Planning Concepts In the absence of the geometry of the specific housing systems assigned to the site and in order to focus only on the major elements of land planning, land use, density distribution and circulation, a graphic vocabulary was developed to illustrate these major elements.

These graphics were then used to design alternative conceptual site plans by arranging the various housing types within an open space network. Without the use of architectural form, which was then an unknown, this process allowed the testing of conceptual alternatives yet still maintained great flexibility for later detailed planning and design.

Alternative conceptual plans were developed suggesting varied concepts of land planning. When tested against the initial planning criteria, the recommended conceptual site plan emerged.

This Initial plan went through further modification and more detailed design studies. However, the basic criteria and the organizing design elements remained intact. These include the location and density arrangement of the housing with an open space network and the general location of various site facilities developing within the site program.

Open space became the major design tool for structuring the site plan. A connecting series of park-like areas link all parts of the site and lead to the public community park in the southeast corner of the site.

Respecting the scale of the existing neighborhood, housing density is lowest at the periphery of the site, increasing to low-rise multi-family units surrounding the central open space. Overall site density was set at eight units per acre. Community and institutional facilities are located in relationship to the major open spaces and to the special school for the mentally retarded on the northeast quarter of the site. The integration of this sizeable facility into the overall master plan has been a prime planning concern.

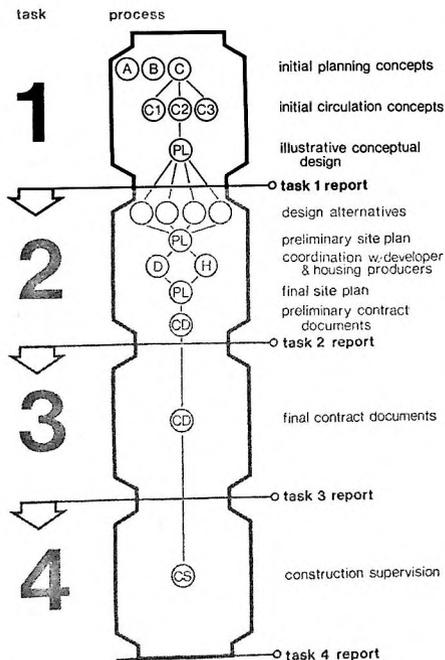
Conceptual Circulation Plan Alternatives were then studied for various patterns of circulation which were applicable to the basic conceptual design. After a detailed evaluation of alternatives, one was selected which best served to reinforce the design concept and which could function as an efficient circulation pattern for the site.

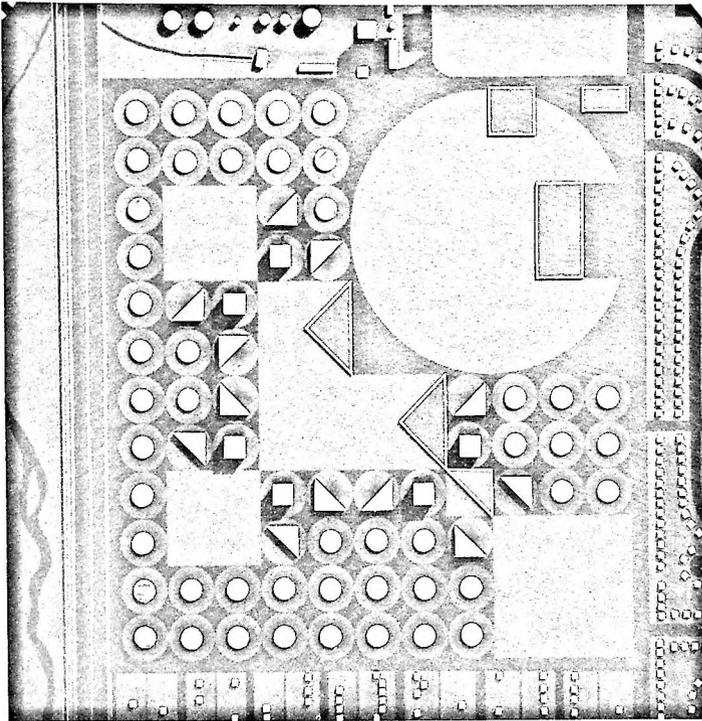
The conceptual circulation plan provides discontinuous access roads from the periphery of the site ending in a variety of parking courts appropriate to the housing clusters they serve. The differing requirements for occupant, visitor and service/emergency access and parking are handled efficiently within the hierarchy established by the "tree" structure of this circulation.

Continuity of open space is clearly established with no conflict of pedestrian and vehicular circulation. Pedestrian links between major open space, community facilities and housing clusters are provided by uninterrupted major diagonal connections through the site. Noise, pollution and concern for safety are held to a minimum by eliminating through vehicular traffic.

Illustrative Conceptual Design At this point, the graphic conceptual plans were converted to an illustrative design to study in more detail the inputs of the design. General architectural geometry was applied to replace the density symbols and the circulation plan was incorporated and further refined. The detailed study of the illustrative with the design parameters of the conceptual plan served to further test the initial planning and circulation concepts.

Design/Planning Process

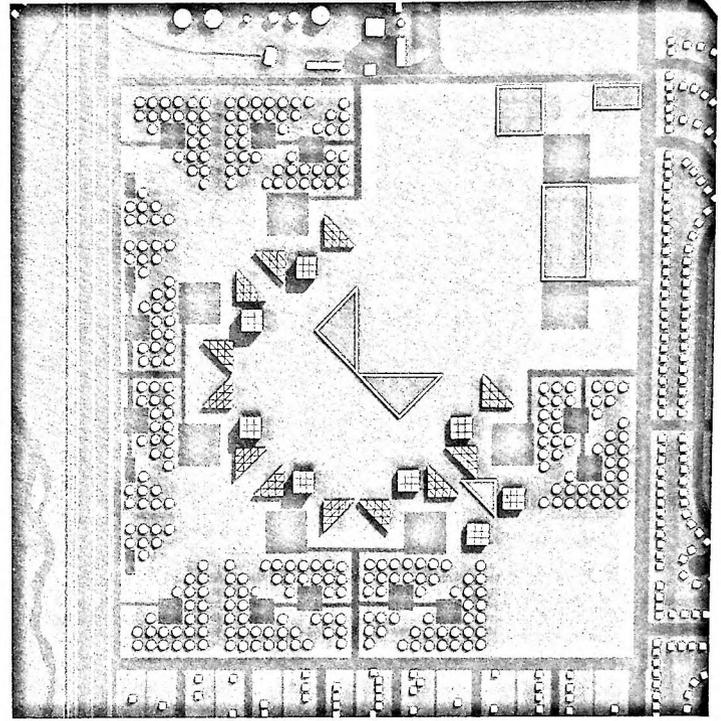




Conceptual Site Plan

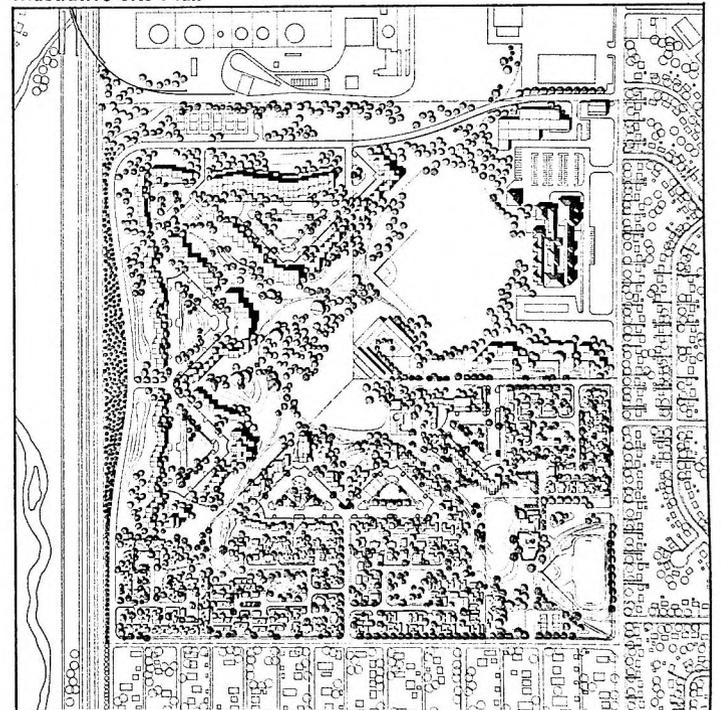
Graphic Legend

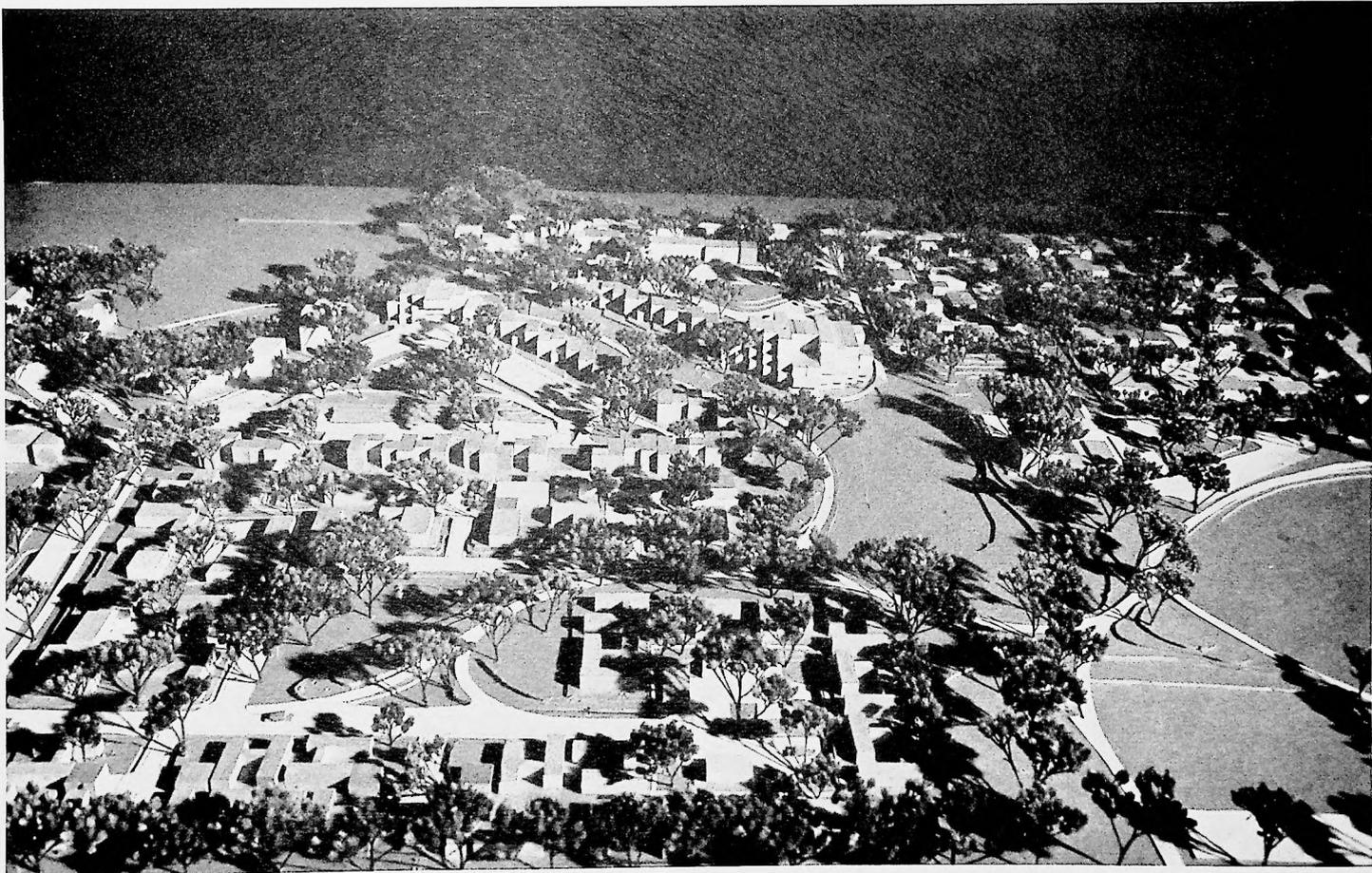
	Private And Semiprivate	Public
<p>Open Space</p> <p>The site is shown divided into square acres. In each acre the distinction is made between public, private, and semi-private open space.</p>		
<p>Single Family Detached Housing</p> <p>The raised circle is the symbol for single family detached housing at approximately 6 d.u.'s per net acre of housing.</p>		
<p>Single Family Attached Housing</p> <p>The raised triangle is the symbol for single family attached housing at approximately 15 d.u.'s per net acre of housing.</p>		
<p>Multi-Family Structures</p> <p>The raised square is the symbol for multi-family of either low-rise or high-rise at approximately 40 d.u.'s per net acre of housing.</p>		
<p>Ancillary Facilities</p> <p>The ancillary facilities are represented as triangles of darker value shown within the public open space.</p>		



Conceptual Circulation Plan

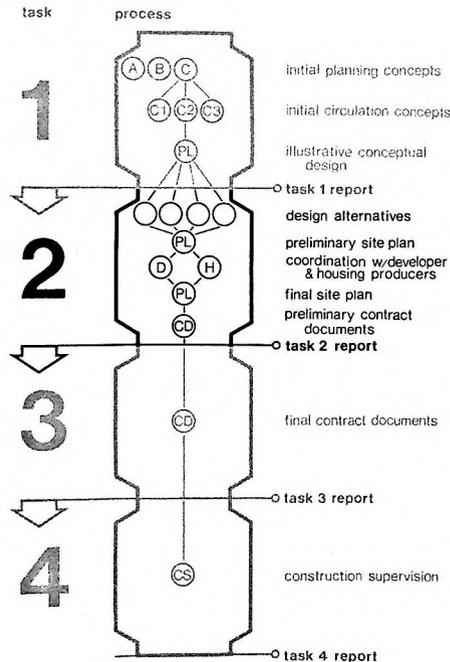
Illustrative Site Plan





site design—task 2

Design/Planning Process



Stage 1 Model

The site design encompasses the community planning and programming, site analysis and conceptual design activities of Task I as well as the Task II activities of expanding and refining the conceptual design through detailed design alternatives, refined marketing and financing strategies, design and technical analysis of the nine housing systems, coordination with the Site Developer and above all, testing of all alternatives and conclusions with the local community in numerous meetings and interviews.

Design Alternatives With the framework for land-use and density distribution and major open space and vehicular circulation patterns set during Task I, detailed site design alternatives were tested for technical feasibility, consumer acceptance, financing options, site design continuity and community needs.

Technical site design tools such as grading and landscape were meshed with the spatial relationships of building forms to arrive at the optimum design.

Preliminary Site Plan A preliminary site plan established a definitive design prior to the assignment of specific building systems to the site. The entire infrastructure of the site; open space, vehicular circulation, grading, landscaping and community facilities, was established at a preliminary design level to create a unifying framework for the housing systems.

Based on previous density distribution studies in Task I and commonly accepted generic housing types, three-dimensional building envelopes and design limits were established as design programs for the future micro site planning of the various housing systems. These design programs became an effective and efficient technique for maintaining control over the overall continuity of the site design as the various Housing System Producers were assigned and started work. More important, however, the master plan and design controls provided a framework and criteria for intelligent choice of housing systems appropriate to the site and its requirements.

Coordination with Housing System Producers

With the assignment of nine unique housing systems to the site, a period of intensive technical and marketing analysis was made to determine the performance capabilities of each system.

These performance capabilities were matched against site planning and programming requirements and locations for each system were assigned. Based on a review of the design requirements of each portion of the site and a technical assessment of each housing system, design limit lines were established for horizontal controls and three-dimensional building envelopes established vertical design control. A preliminary unit type mix and bedroom mix were assigned to each system to guide the initial detailed design by each.

Intensive discussions and design reviews were held with each Housing System Producer to finalize the micro site plans to the point where site development construction drawings could proceed in parallel with detailed design development of individual systems.

Coordination of exteriors including color, texture, materials and detailing will continue as each system completes the design phase.

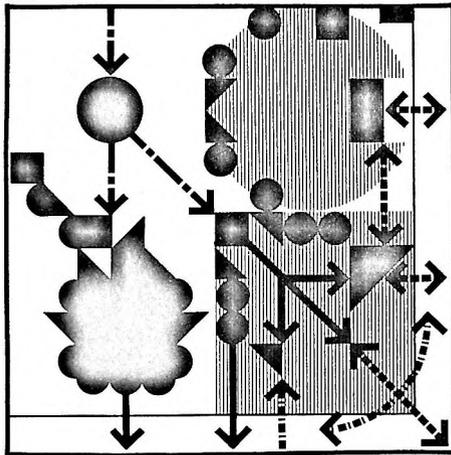
Coordination with the Site Developer In the absence of the assignment of a Site Developer by HUD until the mid-point of Task II, the Site Planning Team initiated many of the marketing, financing and legal/administrative activities normally those of the Developer. These are detailed in Section VII. Upon assignment, all areas of project feasibility were intensively coordinated with the Site Developer.

Final Site Plan and Preliminary Contract Documents Through careful coordination and testing of all elements of the preliminary site plan with the various Housing System Producers, the Site Developer, Indianapolis officials and the local community, the plan was refined and became the core of a total development package.

The plan presented in subsequent section of this report represents the final plan for OPERATION BREAKTHROUGH in Indianapolis.

master plan program and development

Site Criteria Diagram



-  Special School
-  Stage 1
-  Visitor Movement
-  Community Movement
-  Construction Movement
-  Resident Movement

In the initial planning stages two major criteria were determined for the development of the detailed master plan. First, a unifying framework must be provided for the various housing systems as well as the different living patterns associated with private homes, townhouses and apartments. Second, the new site should be planned as an integral part of the surrounding community and be responsive to its needs and characteristics.

By using the extensively landscaped and contoured open space system as the major design element, both of these goals are achieved. In addition to providing an important environmental amenity for the entire community, the open space system establishes a unifying framework for all the elements of the plan. In addition, it links the site to the surrounding community, providing a public community park as well as a series of semi-private spaces exclusive to the new community.

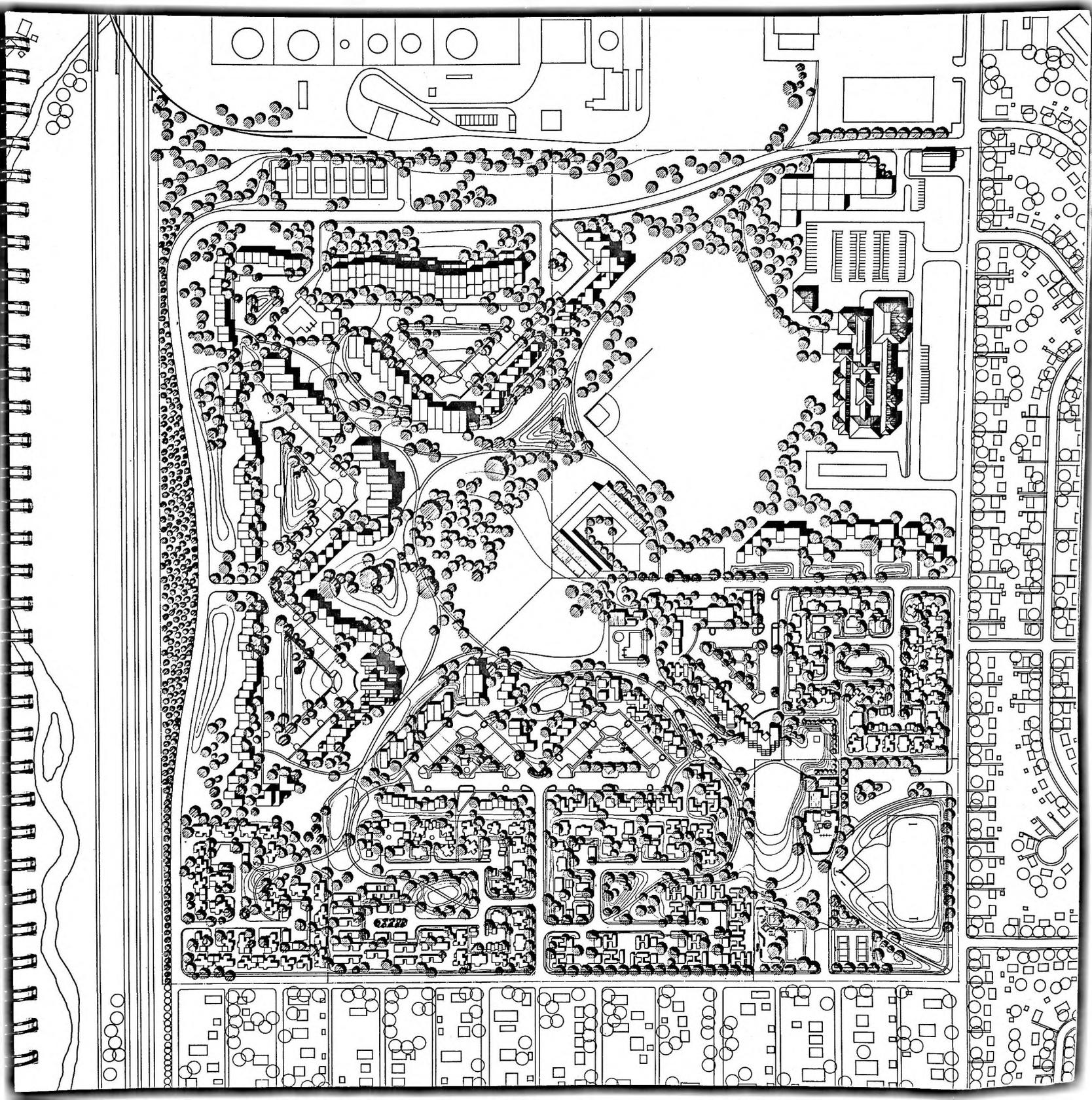
All of the various design elements of the plan are arranged in a hierarchical order, providing a continuity of design while developing distinct public, semi-private and private areas. Grading and landscaping are used to reinforce patterns of movement and give further definition to these areas.

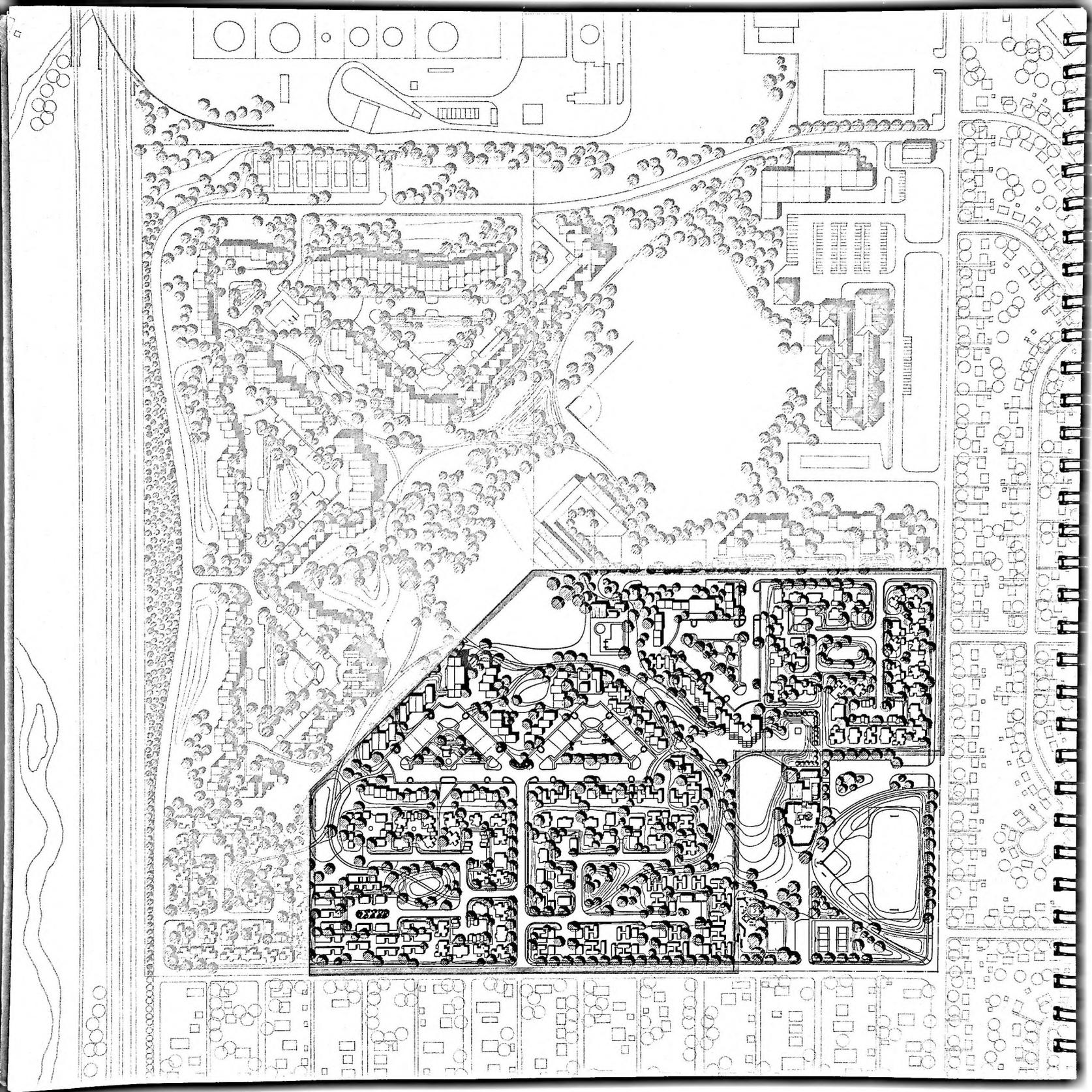
An extensive network of paths running throughout the site emphasizes the close relationship between pedestrian circulation and the open space system. At the periphery of the site, the paths link with the surrounding community at key points. Vehicular access is provided by a discontinuous internal road system which affords access without disrupting the continuous flow of open space. Housing is placed in cluster patterns around small common parks which link with the major open spaces. Single family houses are located on the portions of the site

which are adjacent to the surrounding community, maintaining a continuity of density and scale. Higher density housing is related to the interior portions of the site adjacent to major open spaces.

To avoid increasing the burden on the community's already over-taxed schools and recreational space, the site has been designed to include major educational and recreational facilities for the entire community.

A middle school, located in the center of the site is proposed by the School Board. Presently under construction on the northeast quadrant of the site is a special school for mentally retarded children. The educational approach of the school is to operate as an integrated part of the community in order to create as near normal as possible patterns of living for the children. To achieve this end, and to make maximum use of open space and facilitate a joint usage program for the schools' recreation programs, the schools are situated on either side of a large open area. They will thereby share in an exchange of educational and recreational facilities and programs. Until the middle school is completed, the special school has sufficient space to house a primary school for site residents. A key link with the surrounding community is the Community Center and Park which have been designed in the southeast quadrant of the site, central to the surrounding community and easily accessible to site residents. This park and community building offer major recreational facilities and are strategically located to be a focus for the total community.





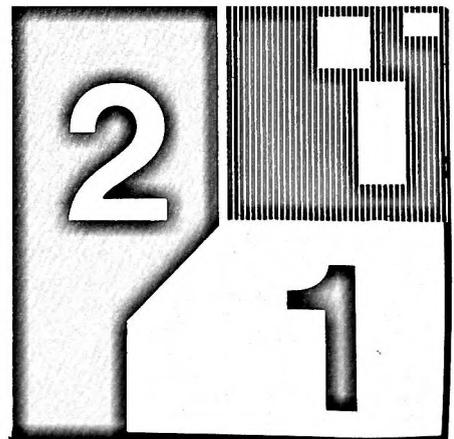
stage 1 program and development

Stage 1 of the development is the OPERATION BREAKTHROUGH portion of the total master plan.

Consisting of approximately 42 acres, Stage 1 is located in the southeast quadrant of the site. This location affords continuity with the surrounding community and allows easy visitor access for observation of the BREAKTHROUGH demonstration. Housing on the site will total 300 d.u.'s and include approximately 35% single family detached, 25% single family attached and 40% multi-family low-rise units.

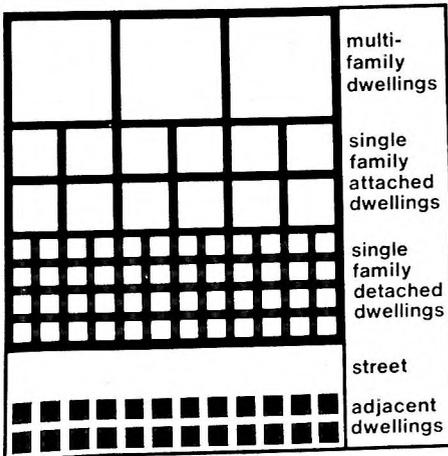
Because of the importance of community acceptance, the site is designed to establish a close relationship with the existing community from the beginning of development. The predominance of low single family housing in this portion of the site is in keeping with the character of the neighborhood and the overall density of the housing is comparable with the adjoining community. Needed recreational and community facilities are located in the prototype site and will be completed and available to residents of the area while the rest of the site is being developed during Stage 2.

Staging Diagram



stage 1 housing

Housing Scale Relationship



Housing The basic goal in the design of housing on the site is to create small, distinctive neighborhoods within the total community. These neighborhoods, averaging 50 units per cluster, are oriented along the open space network and are of two types. Single family detached clusters are located on the periphery of the site, reflecting the scale and density of the surrounding community. Multi-family and townhouse units are combined in clusters toward the interior of the site where they are adjacent to the major open spaces. Units in both types of clusters encircle semi-private parks which provide individual identity and focus for each small neighborhood.

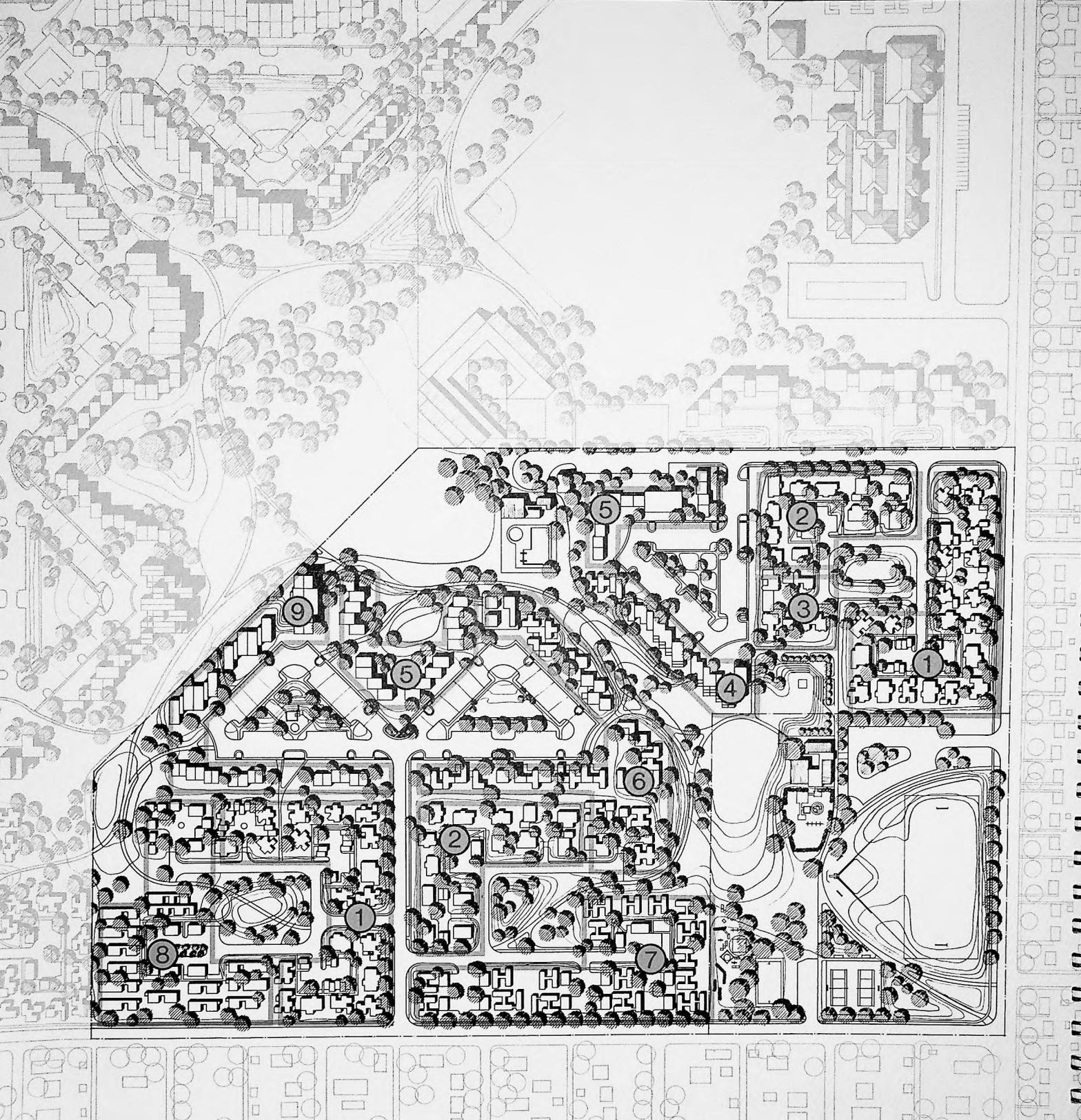
In the single family clusters, houses are placed on minimum lots. Utilizing the zero lot line concept, they are so arranged that individual private yards are defined by the blank walls of the adjacent houses. Through the use of minimum lots, the unused space which usually occurs in individual front and side yards can be consolidated for the semi-private park in the center of each cluster. Thus, all exterior space is intensively and efficiently used for private or common activities.

Housing Mix

	single family detached	single family attached	multi-family	total
eff.			28	28
1 br.			46	46
2 br.		17	47	64
3 br.	52	35		87
4 br.	53	22		75
total	105	74	121	300

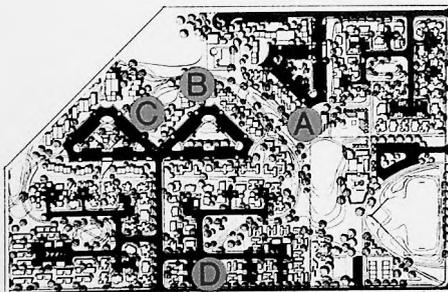
Housing Location



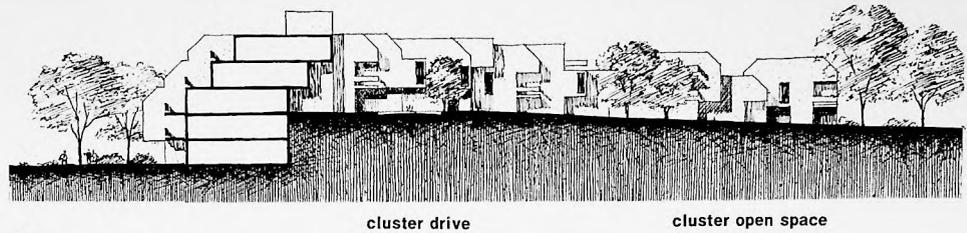


Several factors determined the location of the various systems within the clusters. First is their integration into the design framework which establishes a pattern of height and density increasing toward the interior of the site. Because the site is a showcase for housing systems, it is desirable that a wide range of systems be easily viewed from the central location of the Visitor Center. Another determining factor was the varied type and range of systems each Housing System Producer wanted to demonstrate and the determination to provide a variety of housing types and densities in a single coherent community.

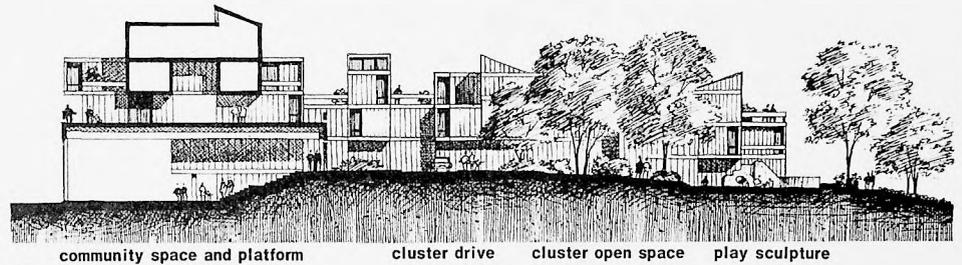
Townhouses and apartment units are used on the site to define and channel movement between the major open spaces. Low-rise multi-family units are placed on the edges of the open space and serve as points of reference throughout the site. Four to five-story walk-up units utilize a grade change and can eliminate the need for elevators. The entry occurs on a middle level with two to three floors above and one to two floors below. There are two types of placement for single family attached units. Near detached homes they are two story units on grade. Between the multi-family units they are a half level below grade, which provides lower entry courts to the townhouses. Single family units are placed on plateaus within the cluster arrangement. This elevates them two to four feet above the cluster drives to maintain privacy from other activities in the cluster's common open spaces and parking areas.



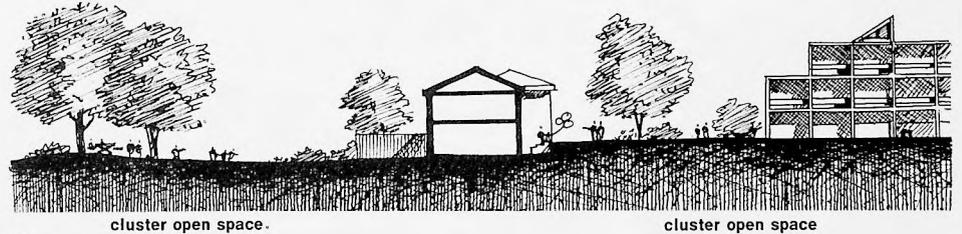
Housing Systems Arrangement



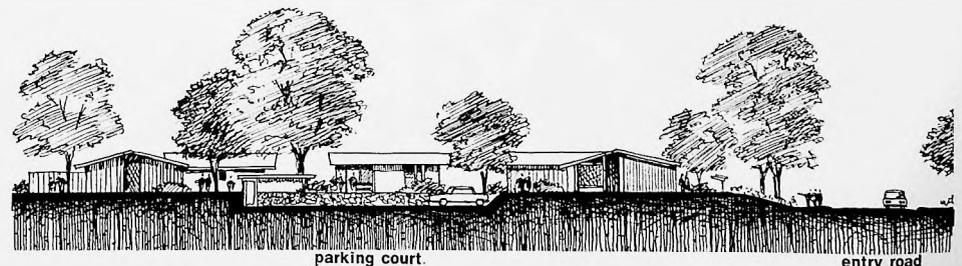
A Multi-Family – 1



B Multi-Family – 2



C Single Family Attached



D Single Family Detached

stage 1 community and site facilities

Community and Site Facilities play an important role in the successful development of a total living environment. They establish identity ties within the site for the residents and also provide an important activity link with the surrounding community.

Public community facilities are open to both site residents and the surrounding area. They provide the necessary link by their joint usage of the new community with the established one.

Homeowners Association facilities, on the other hand, are designed for the use of the site residents and are incorporated into a joint ownership program. These areas are located at key points around the site to provide areas of activity and formal and informal meeting places for the residents.

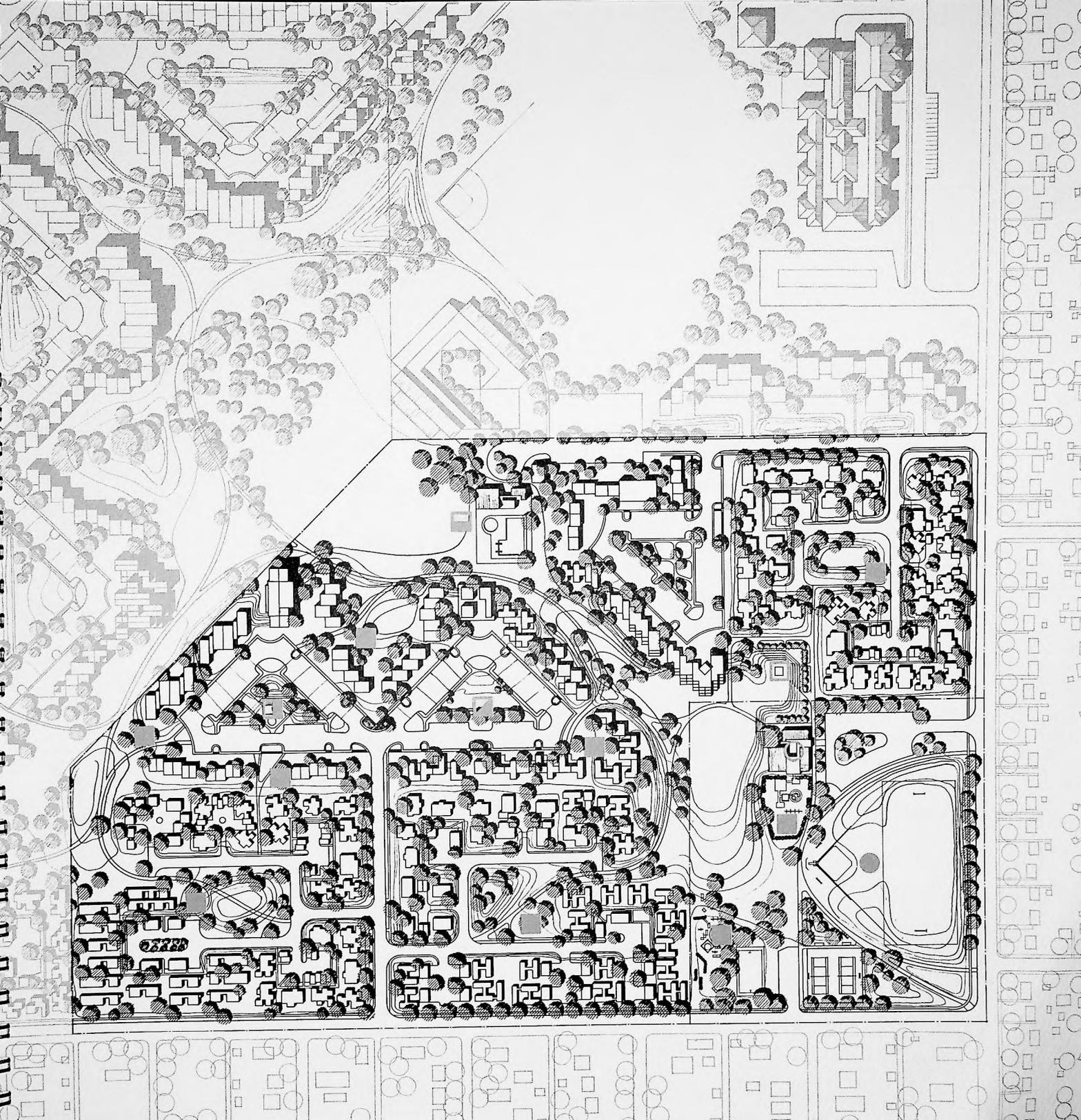
Site Facilities

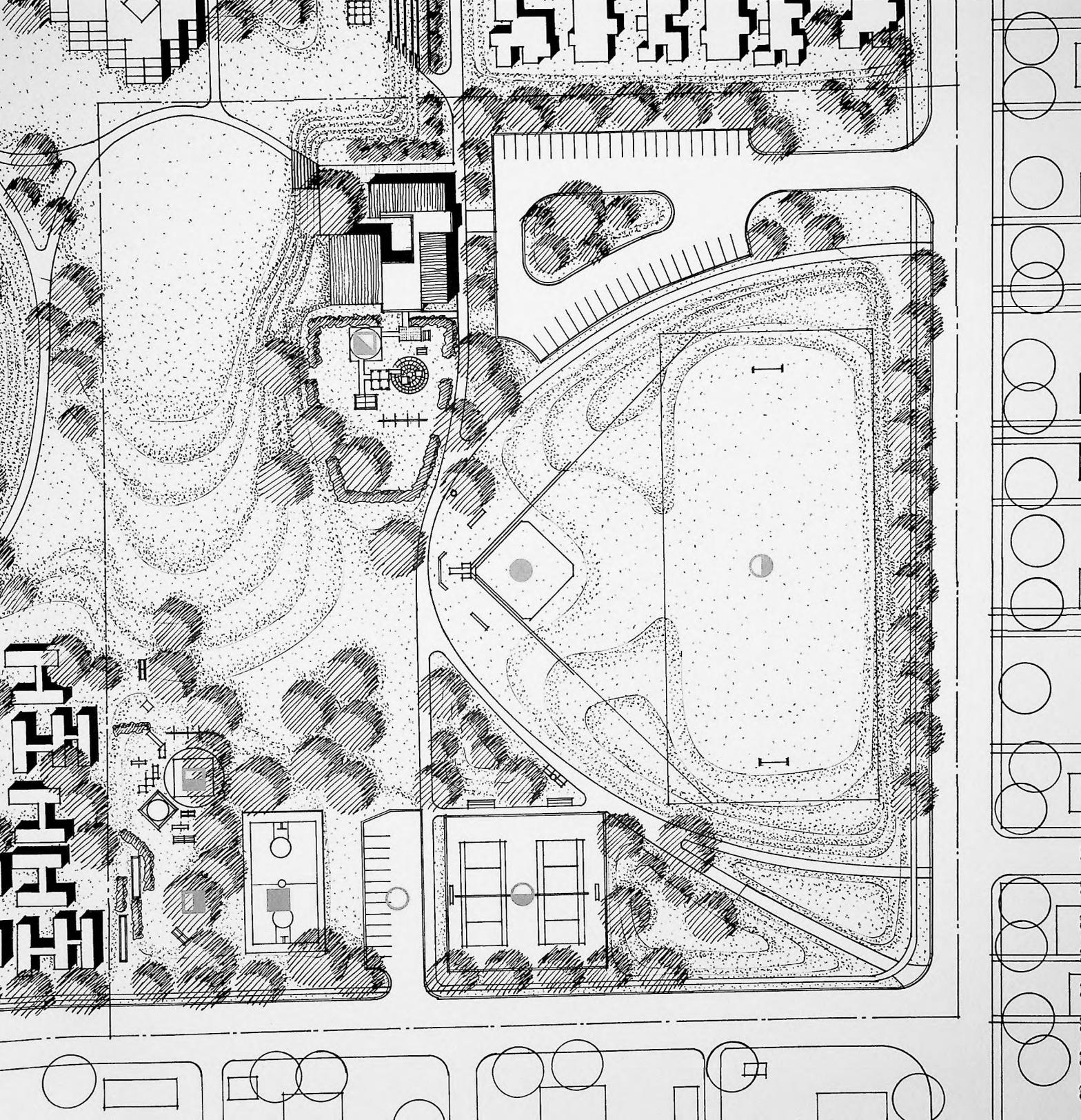
- community club and pool 
- amphitheater 
- special play area 
- tot lot 
- pergola 

Community Facilities

- community park 
- community/visitor center 

Facilities Location





The public community facilities have been designed as a direct response and solution to the surrounding community's needs. The Community Park, which is located in the southeast quadrant of the site, is part of the Stage 1 development and is easily accessible for both site and community residents. The park consists of 10 acres and will be owned and maintained by the Indianapolis Department of Parks and Recreation.

The main area of the park includes a baseball/softball diamond and a football/soccer field. The playing fields have been set into a bowl shaped area, allowing spectator seating along the slopes. A picnic area is located on the western side of the park among a grove of existing trees. Adjacent to the picnic area is a playground for children from 6–12 years old, which features special play structures, swings and a hard surface area. Also near the picnic area are tennis courts and a multi-purpose court with fixed basketball equipment. The court may be used for volleyball and other net games and is equipped with removable posts and nets.

In the center of the park is a Community Center and play area for toddlers. This playground is sufficiently removed from main activity areas to allow for safety and easy parental supervision. Situated near the Community

Center, it could also be incorporated into a day care facility.

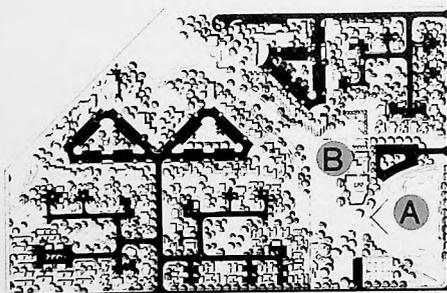
The Community Center will provide space for such community activities as classes, meetings and social events. The Parks Department will operate this facility and run day and evening programs for children and adults.

The center is designed to have a large multi-purpose room with adjoining kitchen facilities, two meeting rooms, office space and toilet facilities. The rooms are arranged around an open court for informal contact between activities.

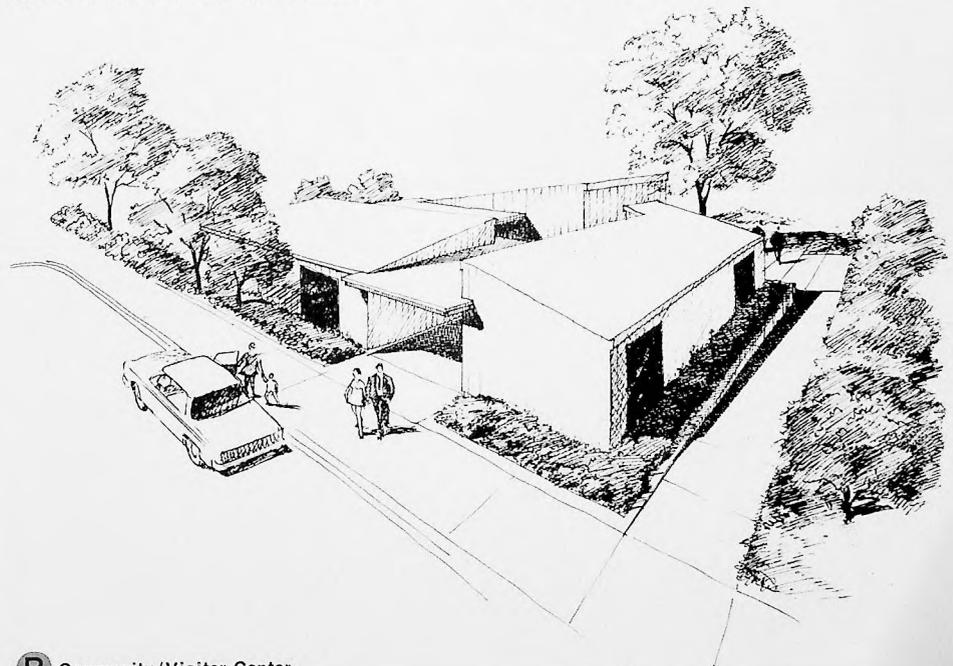
During the publicity and display period of OPERATION BREAKTHROUGH, this facility will serve as a Visitor Center. It is centrally located on the site, adjacent to the construction activity and subsequent housing, yet accessible directly from the existing community.

Immediately northwest of the Community Park is an open meadow which connects the park to the site's central open area. In this area, and adjacent to the Community Center is an amphitheater formed by earthwork and railroad ties for seating. This area can be used for concerts, lectures and plays and in the winter can be flooded for ice skating.

-  baseball/softball field
-  football/soccer field
-  tennis courts
-  parking
-  basketball/multi-purpose court
-  picnic area
-  older children's play area
-  younger children's play area



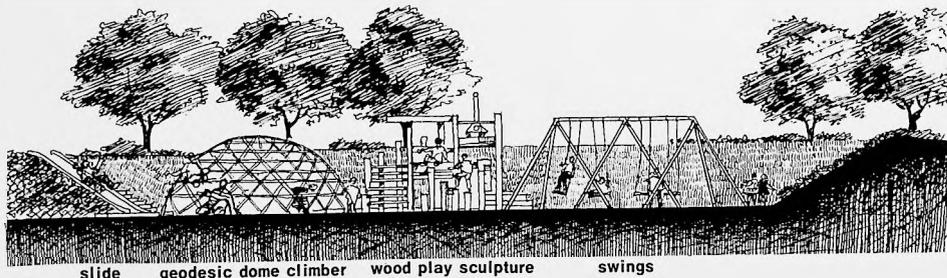
A Community Park Plan



B Community/Visitor Center

The site facilities designed for use by the residents of the development range from a community club and swimming pool to small neighborhood tot lots located in each of the cluster areas. The centrally located community club and pool is designed to house swimming pool and locker facilities, clubrooms and the management offices for site maintenance. This area will also be used as the sales office for the site housing. The pool will be owned and maintained by site residents. During the summer season it will be a focus of activity for residents.

In the multi-family cluster areas distinct usages



A Special Play Area

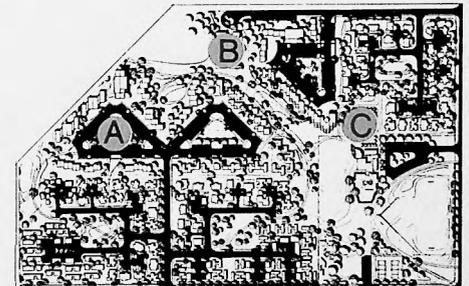
have been designed for the common areas. A special play area has been designed in the western part of the site. By using earthworks and landscaping, a unique space has been created which incorporates special play equipment. The change in level which occurs in this area works in conjunction with the play equipment to create a stimulating and varied playspace.

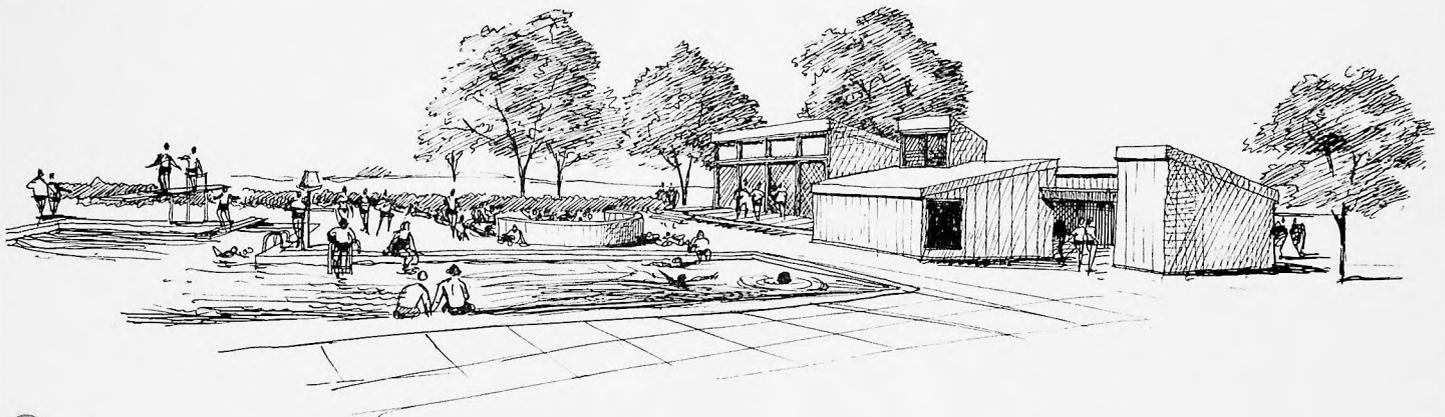
A second kind of space has been created in another cluster area for picnic and small field game activities. A pergola has been designed for the southern edge of the open space which shelters picnic tables and benches. It overlooks a level play area which has been

designed for a variety of uses.

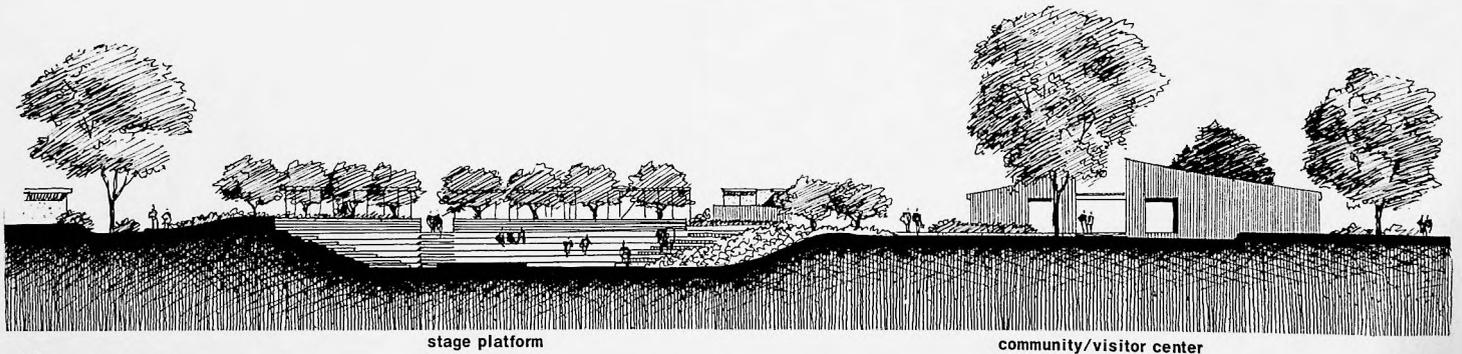
A garden area has been developed in the third cluster open space. This area consists of an informal park arrangement with benches creating an intimate space for quiet conversation.

Two types of tot lots were specially designed and located at various points in each of the clusters. They are also equipped with picnic tables and provide gathering places for children and parents. These play areas, set within the larger open space, create safe, close-to-home areas for small children in the development.





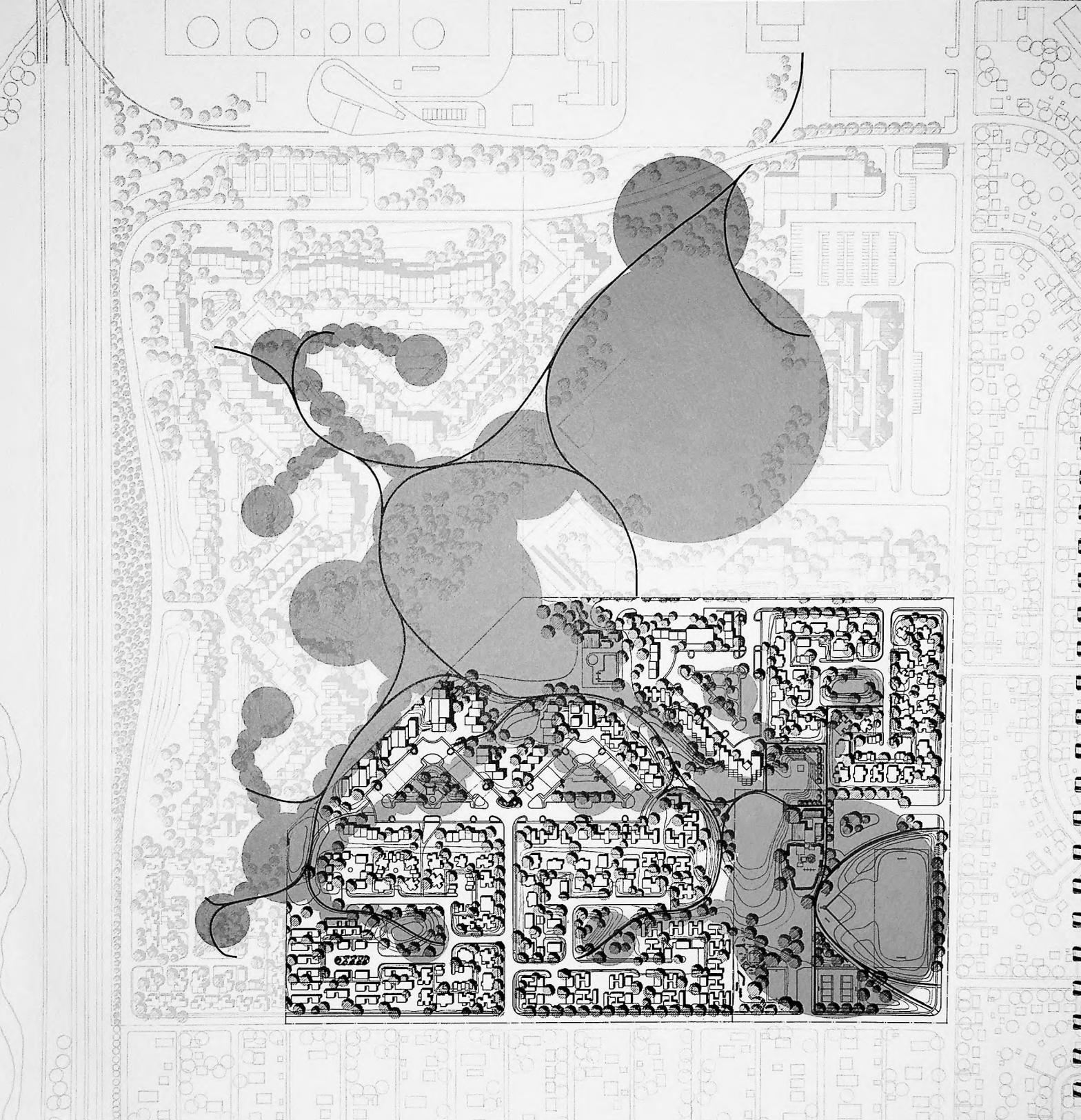
B Community Club and Pool



stage platform

community/visitor center

C Amphitheater



stage 1 open space

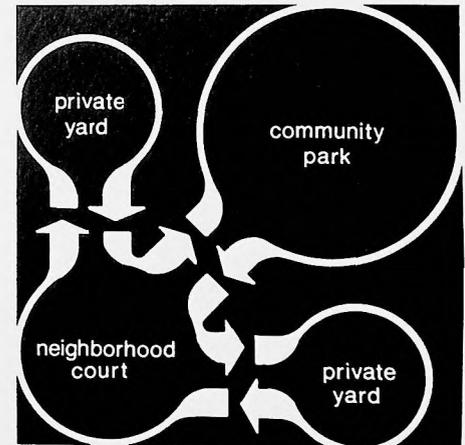
Open Space The extensive network of open space is the major organizing design element for the site plan. It provides a unifying framework for placement of the various housing systems and all of the ancillary elements of the plan. In addition, the open space forms a link to the surrounding community by opening the site at various points and relating the recreational and educational facilities of the new community with the existing community. An internal pedestrian system runs throughout the site, linking the various open space areas. The 8' wide asphalt paths accommodate both pedestrians and bicycles and provide access to all points on the site, independent of the road system.

Grading and landscaping are used to reinforce the open space areas and play a major role in the total site design. The continuous flowing contours create a sense of unity from any point on the site and help tie together the diverse forms of the many building systems. The degree of contouring varies in relation to the type of building forms and intensity of development and is therefore integral to the design. Subtle contouring in the low density areas of the site increase proportionately with the increase in density and complexity of building form in the higher density multi-family areas. Park and path areas are graded lower than housing and roads to define usage and maintain privacy.

Additional benefits of grading include: the potential of five-story multi-family buildings on sloped sites that allow access to condominium apartments within two flights of stairs with no elevator expense; a minimum of storm sewer lines by increasing natural drainage to fewer collection points; and more economical landscape maintenance by minimizing localized ponding. Finally, all available local experience in marketing indicates that site contouring is one of the most inexpensive methods to achieve a dramatic amenity and unique marketing image for a residential development. This is especially so in the flat midwestern plain states.

Landscaping has also been used as a major site design tool. Trees and shrubs follow the edges of the open space, providing further definition and punctuating points of entry. The use of more mature plant material than is usually contemplated for conventional developments is dictated by the somewhat unusual nature and forms of the housing units, their "industrialized" stigma and the practical need for a visual completeness in the initial viewing stages of the development.

Open Space Diagram



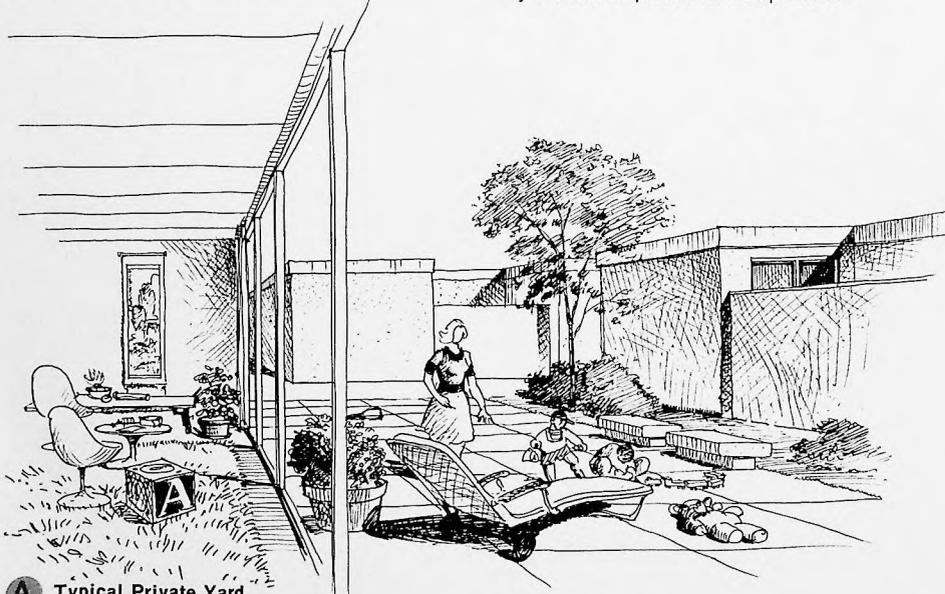
The size and distribution of green areas is ordered according to a hierarchy of usage. These areas range in scale from private yards to semi-private cluster parks and public open spaces. Individual housing units are provided with small private yards and courtyards. These areas provide room for family backyard activities and also serve as small play yards. They are situated so they are easily observable from the house.

The private spaces of the individual houses surround a semi-private cluster park. Intended for use by the families within each cluster, they provide space for activities which require more room than a private yard. Play areas located in each park will keep young children close to home without the

expense of individual backyard play equipment.

Here, grading separates the parks from the housing and the drives by placing them at a lower level, thus providing a distinct congregation area. These spaces continue to flow downward with the pedestrian paths to the larger meadows and parks of the public open spaces.

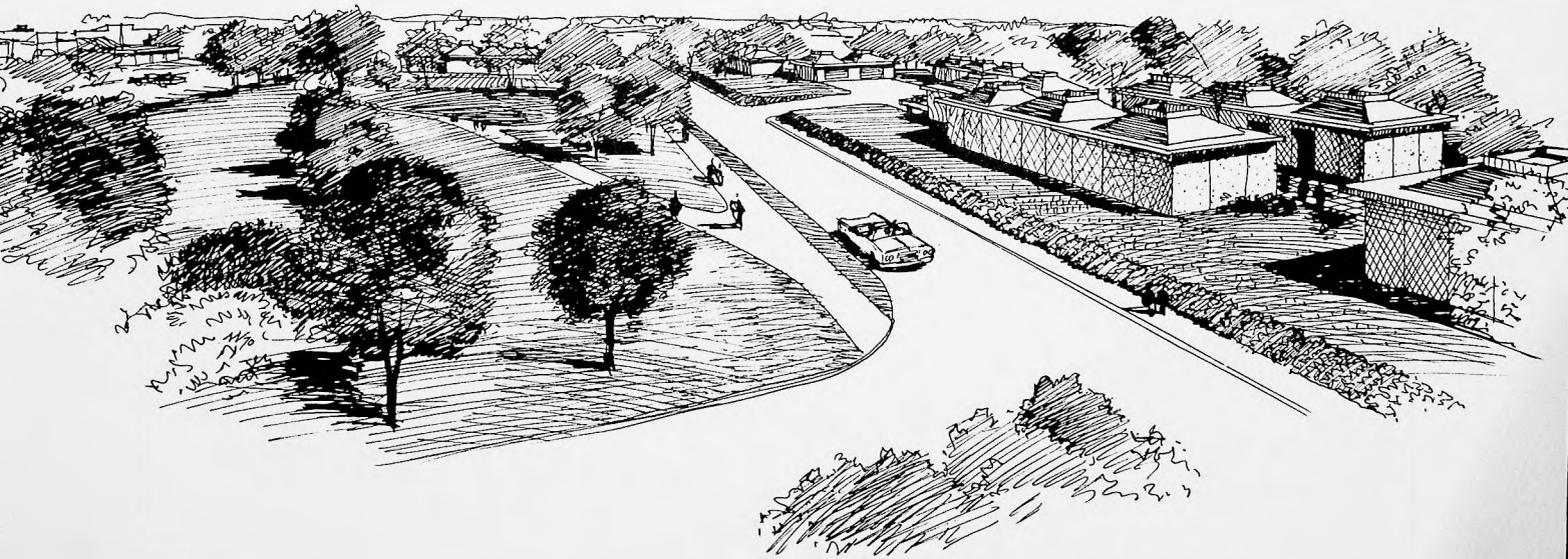
These major spaces are the natural focus points of the open space development. Provided with easy pedestrian access, the large open areas offer major recreational, educational, and community facilities to all area residents. These spaces, which include the Community Park at Tibbs Avenue and 21st Street and the central open meadow, will be owned and maintained by the Indianapolis Parks Department.



A Typical Private Yard



Typical Cluster Open Space **B**





The meadow in the center of the site is the converging point of the open space system. The large trees around the old State Farm buildings in this area will be carefully preserved. The buildings will be used during construction as an assembly and holding area for the housing systems. After the completion of Stage 1 they will be removed from the site. This area with its large trees will offer a shady canopy for picnic areas on the fringes of the meadow.

From this central meadow the open space funnels through the multi-family housing units into a smaller meadow area. Here an outdoor amphitheater is built into a terraced hillside. This facility will provide a place for a wide range of summer activities such as concerts and plays and can be flooded in the winter for ice skating.

Immediately adjacent to this small meadow area is the Community Park. This park is the major recreational facility for the entire area and is so located to be central to the surrounding community as well as the site. It offers an immediate response to the existing community's need for organized recreational space. Consisting of ten acres of land, it includes facilities for a variety of sports activities. Also located in this park is a Community Center which will be operated by the Parks Department and offer supervised park activities and programs for the entire community.

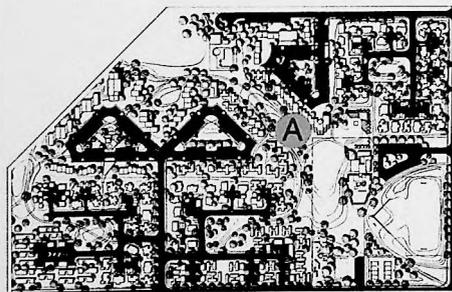
Utilities Layouts for the necessary utility systems have been prepared by the proprietary companies for water, gas, telephone and electric distribution, and by the Project Team for storm and sanitary sewers. Generally, sewers are located in proposed public rights-of-way with the intent of their reverting to Indianapolis UNIGOV ownership upon completion. Ownership of all other systems will remain with the respective private utilities. Of these, water is generally located within the right-of-way, but the power, telephone and gas companies find it more efficient to distribute adjacent to the right-of-way. Easements will be

provided to these firms as well as to UNIGOV for facilities on private property.

Power and telephone lines are located underground; in most instances, in a common trench. Conduit will be provided for crossings under pavement areas. Overhead wires and the accompanying clutter of poles are eliminated, and the common trench reduces cost as well as easement width. Other utilities are grouped with these systems where possible to keep easements to a minimum. Privately designed systems are being coordinated with the overall utility layout to avoid conflicting locations and insure that the best interests of the site are served.

The sanitary sewer layout is based on the usual gravity flow. However, during investigations of new methods for BREAKTHROUGH, a most promising alternative sewage collection system was analyzed. Operating under the trade name "Sanivac," the system is based on vacuum for flow rather than gravity. Pipe size is reduced from 8" and 10" to 3" and 4"; materials from clay tile to plastic; and depths dictated by gradient to those necessary only to prevent freezing; manholes are eliminated. Considerable savings in water usage can also be realized through use of their vacuum toilet. The system has been in operation for up to ten years outside the United States. A separate report has been submitted on this system and its demonstration on the site is recommended.

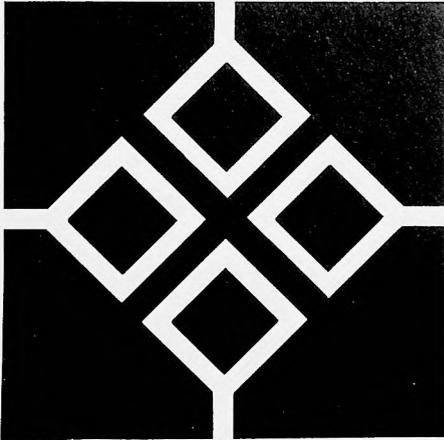
The extensive grading and contouring of the site allows a significant cost saving in the storm sewer system over conventional subdivisions. Due to the grading design and open space layout, the system can be designed to take advantage of the low green open space areas on the site. During periods of intense rainfall, low areas will provide temporary ponding capacity for that runoff in excess of storm sewer capacity which permits reduction of design storm frequency resulting in smaller sewers without endangering private property. In addition, the continuous open space system and extensive site contouring maximizes surface drainage to a minimum of collection points.



A Open Space Connector

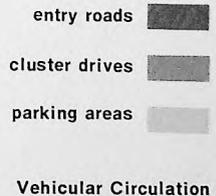
stage 1 vehicular circulation

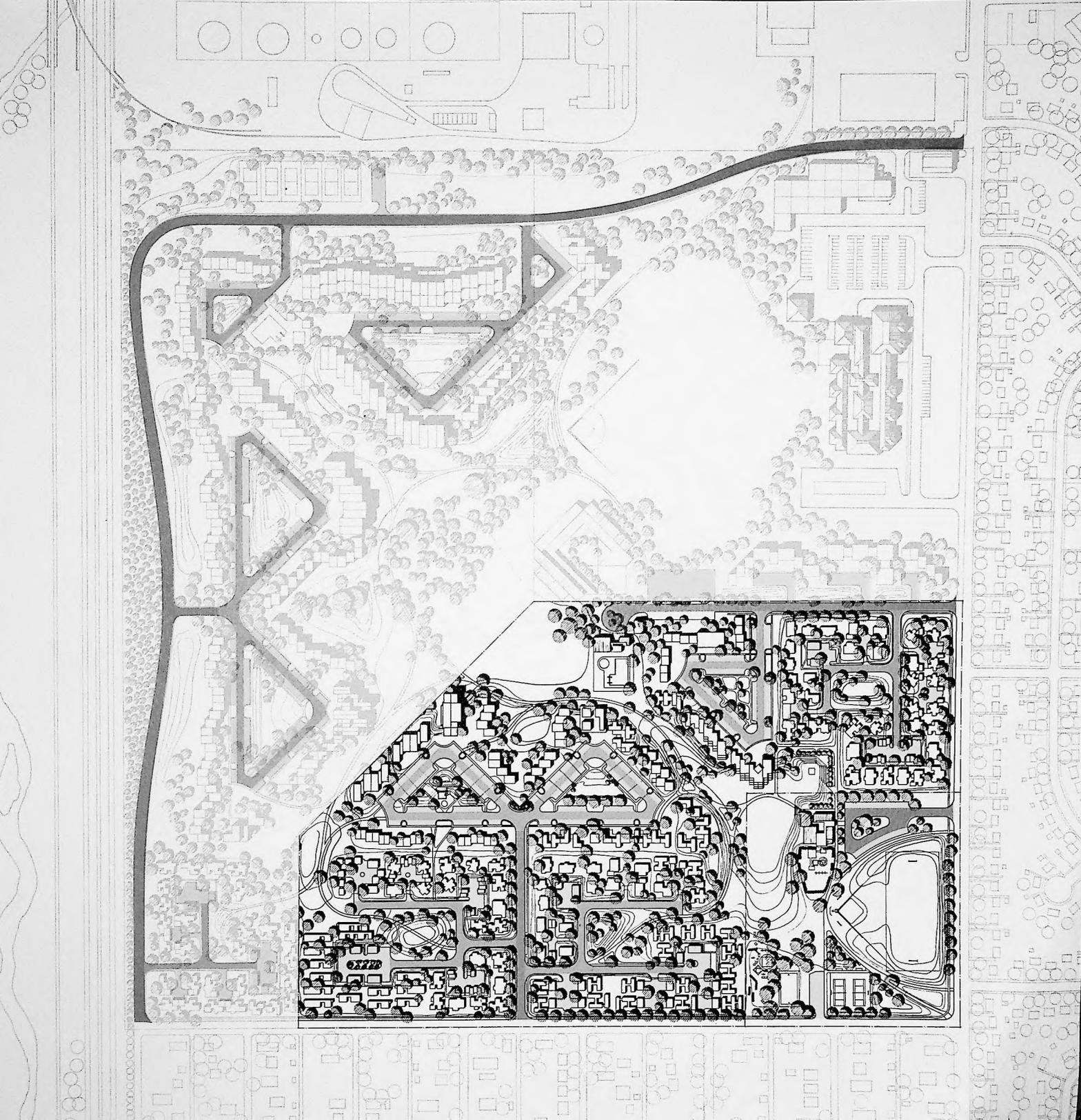
Circulation Diagram

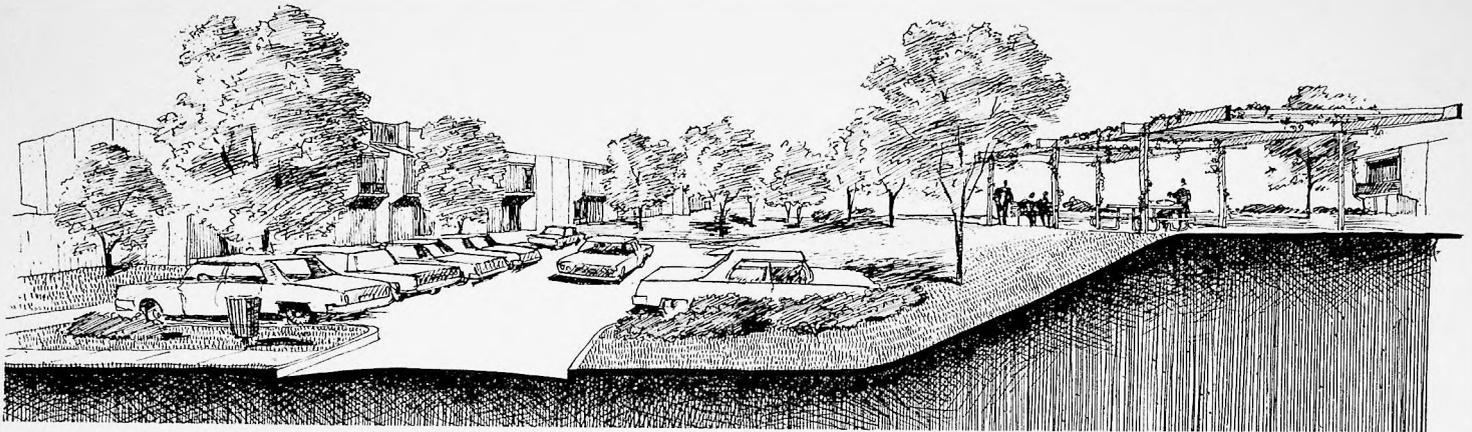


Vehicular Circulation is provided by a discontinuous internal road system. This space is independent of the given open spaces without interrupting their flow, thereby affording continuous pedestrian circulation. Existing roads are used to form an exterior loop road which offers entry points to specific destinations on the site while eliminating through traffic patterns. A relatively small proportion of land is used for automobile circulation and parking by the use of minimal rights-of-way widths and careful layout. At 18% of total land area, the space required is less than half of that of a conventional subdivision of comparable density.

The widths of the roads vary according to a hierarchy of usage and character. Roads entering the site from the surrounding community are the main points of access. These lead directly to the housing cluster drives and major community facilities. It is proposed that these major roads will be publicly dedicated and maintained by the City. Site entry roads are 26' curb-to-curb. Although this is narrower than average city streets, it provides ample roadway by virtue of overall design for peak hour demands defined by careful traffic flow analysis. The smaller right-of-way system also provides a sense of entrance to the development by contrast with the larger roads in the surrounding streets.



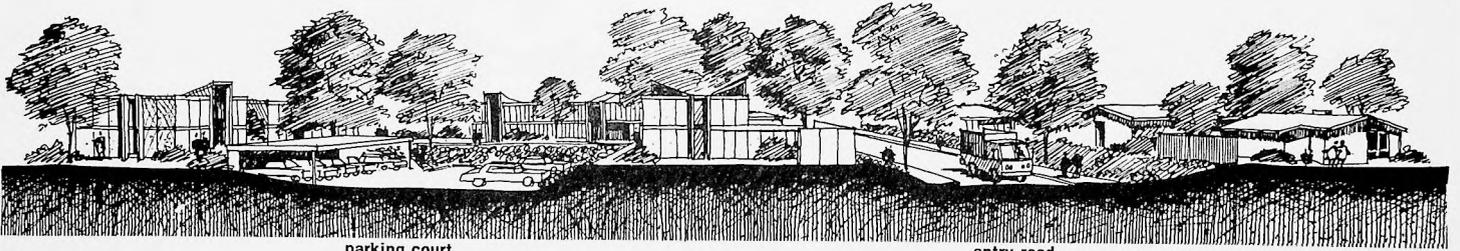




cluster drive and parking

pergola

A Multi-Family Parking Area



parking court

entry road

B Entry Road Section



cluster open space

cluster drive

21st street

C Cluster Drive Section

The cluster drives which branch off the entry roads terminate at the various housing groups. These drives are 22' curb-to-curb which allows one lane for overflow parking and still provides ample access and meets safety requirements. Because they are not thoroughfares and will be used only by residents of the cluster, the volume of traffic is minimal. These drives may be safely used by children for hard surface games and activities.

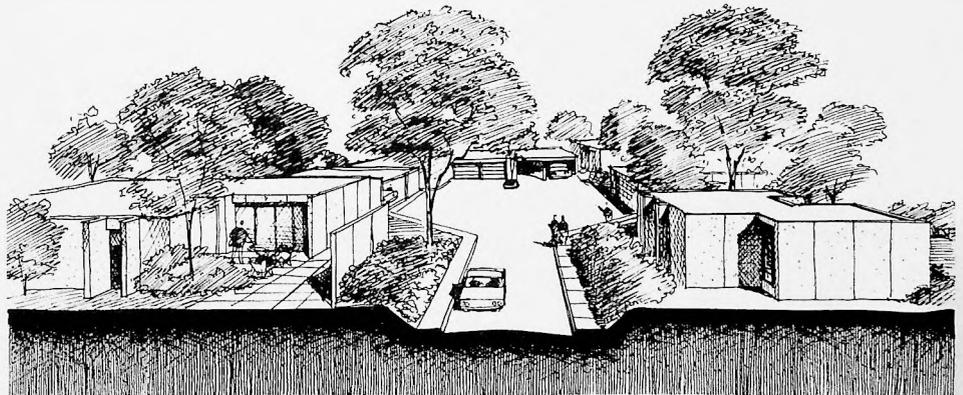
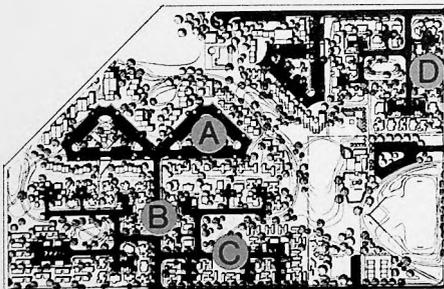
Termination points along the cluster drives serve both as entrance courts to the housing units and as a receptacle for cars. There are four types of parking facilities located at these points, each of which is designed to provide two spaces per family. In multi-family areas parking spaces are provided in pull-offs along the cluster drives. These parking areas are visually defined and controlled by landscaped islands which allow pedestrian flow to the parks and play areas in the center of each cluster.

In the single family detached clusters two types of parking courts are utilized. One is a common parking area which provides one covered and one uncovered space for each unit. The spaces will be assigned to each resident

and located within 50 feet of each house. These areas are on a lower level than the houses and are landscaped to provide an attractive arrival point to each court and entryway into the house. Individual storage units are located for each unit in the covered parking structures. At one end of the court is a special pull-off area with water supply for car washing. The other single family parking facility is a garage court. Here, privately owned garages are arranged in groups of four around a common paved court with one driveway. This provides an area for the housing systems to demonstrate attached garages with the units while eliminating the usual and inefficient arrangement of individual curb cuts, driveways and the resulting increase in paving area. In addition to providing direct vehicular access to the houses, these enclosed courtyards will be ideal play areas.

All roads on the site have been carefully designed with the proper turning radii for service and emergency vehicles. The system of pedestrian paths has been designed to accommodate vehicles in an emergency situation. Thus, complete internal vehicular circulation is available for emergency access to any point on the site.

D Typical Garage Court



stage 1 street furniture

Street Furniture design and placement, which includes lighting and signing systems, is a key and often overlooked element in the successful design of a residential community. Clarity of design can be evident in plan form, but must be reinforced by integrated design and strategic placement of signing, lighting and other street furniture.

The design and placement of street furniture and hardware have been closely coordinated to produce an uncluttered, well organized system, which reinforces the concepts of the site plan. The complementary materials and designs which are used throughout promote visual unity and identity while requiring little maintenance to retain their attractive appearance. Lighting and signing has been held to a minimum by using the systems to reinforce the clear hierarchical patterns of the site design. Thus, the pedestrian and motorist are provided with services, information and directions at logical and consistent points without the unattractive and confusing clutter so often produced by these elements.

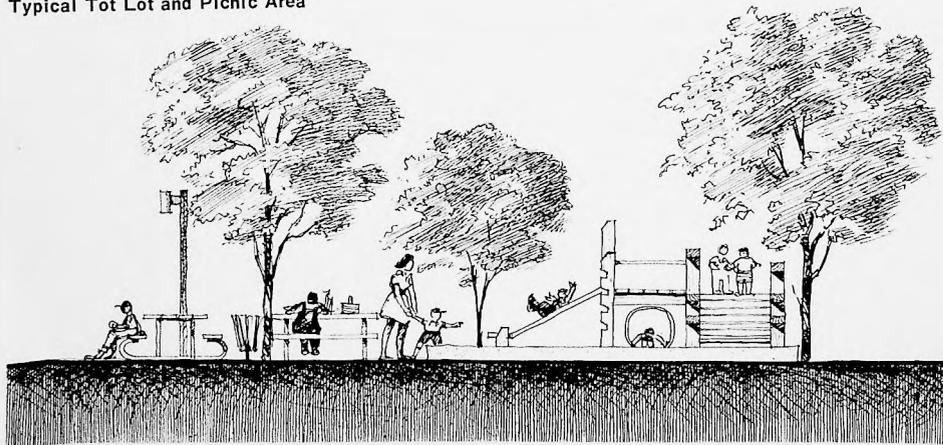
Simplicity and function in design were key

factors in the selection and design of major items which include benches, picnic tables and trash containers. A major goal in designing the street furniture system was total coordination of the individual items on the site. Natural pre-finished wood and galvanized pipe were selected as major materials because they age well and blend into the landscape, becoming an integral part of the overall design rather than an ornamental addition.

Placement of the furniture carries out a concept of the site plan which establishes various points of assembly and activity within each cluster as well as points within the open space network. Natural activity areas developed in the design are equipped with furniture appropriate to their function. Groups of benches are situated in quiet conversation areas, while picnic tables are located in larger open space areas, next to tot lots and playgrounds.

Trash containers are located at all points of activity, including parking areas. The appropriate location of these containers will help reduce litter and maintenance costs.

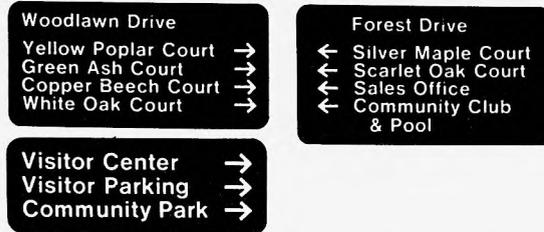
Typical Tot Lot and Picnic Area



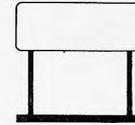
- lights ●
- signs ■
- tot lots ○
- picnic tables □
- park benches ▣
- pergola ◐

Street Furniture Location



Signing**Mounting****Color & Type Face****Directional Signs**

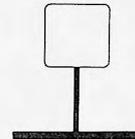
Size: Variable



Background: Blue

Type Face:
White
Helvetica Medium
Initial Capitals**Regulatory Signs**

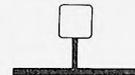
Size: 24 Inches Square

Standard Sign
On Blue Background

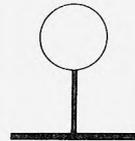
Red Cross Bar



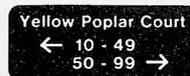
Size: 12 Inches Square

**Temporary Signs**

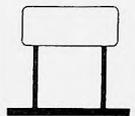
Size: 24 Inch Diameter

Background:
Red-OrangeType Face:
Red-Orange or White
Helvetica Medium
Lower Case**Pedestrian Signs**

Size: 12 Inches Square

Background: Blue
Type Face:
White
Helvetica Medium
Lower Case**Housing Signs**

Size: Variable

Color Coded To
Match Color Selected
For Individual
Courts

Court Directional



Size: 12 Inches Square

Mounted On Lighting
Standard 'A'Type Face:
White
Helvetica Medium
Initial Capitals

Court Names



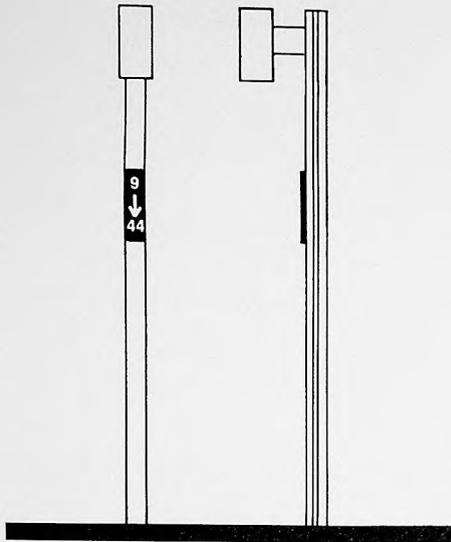
Size: 6 By 18

Mounted on Lighting
Standard 'B'House Number
Directional

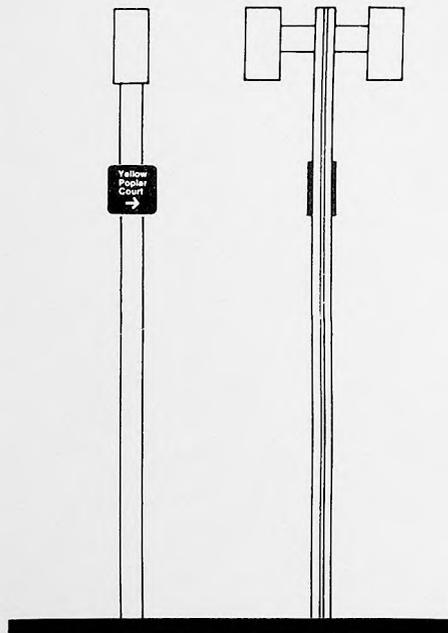
Size: 6 Inches Square

Mounted On Building

House Numbers



Lighting Standard 'B'



Lighting Standard 'A'

Signing System

The lighting plan developed for the site maintains the residential scale of the community. It is primarily a destination system with low-keyed definition of information sources, key decision points for motorists and pedestrians.

Entrances, intersections and parking areas are clearly illuminated for the motorist, as are specific destinations and information sources. Between these points, car headlights are depended upon to provide ample street lighting. Pedestrian lighting is similarly designed. Illumination is provided along pathways in the common open areas, at points of activity such as major groupings of street furniture and play areas.

The standards are the same pre-finished wood as the street furniture and the luminaires are translucent white acrylic.

The regulatory and informational system of signing is closely coordinated with the lighting arrangement. Common standards are used throughout to eliminate unnecessary clutter. The system is designed to accommodate

the many temporary signs necessary for BREAKTHROUGH purposes, marketing and visitor control, while offering a finished and consistent appearance at any point in the development. The number of signs has been held to a minimum with the clarity of the site plan and its detailed component elements providing sufficient information through design alone.

The format for all permanent signs is a variation of the rectangle. The signs are clear and immediately legible without detracting from the landscape. All temporary signs use a circle format and will be easily recognizable to site visitors.

A system of separate color coding clearly distinguishes each of the six housing clusters or courts. Each court is thus given a strong visual identity and uniqueness. The background for all general signs throughout the site is blue, and all standard regulatory signs are applied to a rectangular blue background, thus incorporating them into a consistent system.



development process

An integral part of the site planner's services during Task I consisted of identifying the principal, legal and administrative concerns which would affect the planning, design and development of the BREAKTHROUGH site. The focus of the Site Planning Team was the development of a program for innovative action in implementation of the site design and a continuous creative interaction between legal/administrative design and physical and social design throughout the site planning process. This, initially involved analysis of the applicability of existing zoning controls and subdivision regulations to the objectives of the BREAKTHROUGH program; making preliminary arrangements with relevant city agencies for expeditious approvals of the technical aspects of the site plan; and setting the context for intra-municipal arrangements necessary for the financing and operation of those parts of the site which would be devoted to public or semi-public uses. Thus, by the end of Task I, the municipal administrative structure was sensitized to the nature of the legal, financial and operational measures which would be necessary to implement a master plan and accommodate the prototype housing units ultimately selected for the site.

In Task II, as the site plan was carried from the conceptual to the preliminary design stage, specific implementing recommendations were made based on the information analyses, and arrangements developed through the Task I effort.

Zoning and Subdivision Regulations Pursuant to the authority of the Dwelling Districts Zoning Ordinance of Marion County, Indiana, Section 2.135, the City of Indianapolis, through City-County General Ordinance #68, adopted on April 27, 1970, created a planned unit development—special district for the BREAKTHROUGH site. This device allows great flexibility in land planning and simplifies the process of municipal approval of development proposals by providing for concurrent review of land use, subdivision control requirements, public improvements and other site planning considerations.

The master plan for the planned unit development consists of both graphic materials and written covenants covering the substantive aspects of plan implementation. These covenants encompass such concerns as: the phasing of site

development; the delineation of responsibility for the care and maintenance of private property shared in common by the occupants or owners of adjoining or clustered dwelling units; provision for the allocation of land for public or semi-public purposes such as public thoroughfares, utility corridors, parks, schools and recreational facilities.

As a basis for the eventual creation of the implementing covenants, which bear upon site infrastructure, a series of meetings were conducted with the Division of Planning within the Department of Metropolitan Development, the Department of Transportation, the Board of Sanitation Commissioners, the Fire Marshal and other relevant city agencies and officials to assure that the physical features of the plan in terms of street locations and widths, utility locations and grading and siting factors provided adequately for the public safety and welfare.

As a basis for the covenants to be developed in connection with matters of disposition, programming and operation, the recommendations described below were made.

Public and Private Open Space The site plan provides for two types of open space: public, in the form of a community park consisting of approximately 10 acres; and private, in the form of land to be owned in common by site residents. Since the public open space is planned to accommodate the immediate community at large and not just the residents of the BREAKTHROUGH site, it was recommended that the land to be devoted to this use be retained in public ownership. In addition, it was recommended that the City seek an open space grant from HUD for participation in the cost of acquiring and developing this facility. Following this recommendation, the Department of Parks and Recreation has filed an application with HUD for a grant. Once the details of the acquisition of the BREAKTHROUGH site are finalized, the grant will be forthcoming to assure the timely development of this facility in connection with overall BREAKTHROUGH objectives. Since the open space planned for the interior of the site is intended for the exclusive use and enjoyment of the site residents, it was recommended that the land be owned privately in common by those residents. The specifics of this arrangement are spelled out under the marketing and disposition section below.

Visitor Center There has been a mutuality of interest on the part of HUD and the City in the provision of a Visitor Center to be constructed on a portion of the Community Park. The building is intended to serve on an interim basis as a display center during the BREAKTHROUGH demonstration period (approximately two years) and thereafter as an ancillary community facility in connection with the park. However, annual budgetary constraints precluded either the city or HUD from committing itself to paying the full capital costs of the facility at one time.

As of the date of publication of this report, the City and HUD have agreed, in principle, to participate jointly in financing the construction of the facility under terms which equitably reflect the differences in the nature of the use between the two entities. The basic premise of the approach is that the City, through its Department of Parks and Recreation, will own the facility. The Department of Parks and Recreation had sufficient funds to make an initial equity investment in the capital cost of the facility. Arrangements would then be made with a private lending institution to advance funds to the Park Department to cover the remainder of the cost. In consideration of that advance or loan, the Department of Parks and Recreation would issue tax warrants to the lender. Commitment to this approach on the part of the City would be conditional upon an agreement between HUD and the City whereby HUD would lease the building for the two year demonstration at a rate sufficient to help retire a portion of the Park Department's obligation under the warrants. This would, in effect, afford the Park Department a moratorium on payments after the initial equity outlay for a period of time sufficient for it to arrange for the repayment of the balance of the obligation (i.e., the difference between the amount made available by the HUD lease and the balance of the obligation under the warrants) out of the budgets for subsequent years. In addition, it will provide a structure for HUD's participation in the cost of a facility from which the national BREAKTHROUGH program will derive considerable benefit.

Land Disposition—Marketing In Task I the Site Planning Team undertook an analysis of the Indianapolis housing market to determine the range of prices and sizes of dwelling units which the BREAKTHROUGH program should focus on. These preliminary findings were confirmed by the marketing and management arm of the prototype site developer during the final stage of the Task II effort.

Given the general marketing parameters, it then became necessary to specify the manner in which the developed site ultimately would be disposed of to residents. In effect, recommendations were required as to the form of tenure individual or family residents would have in connection with

the prototype housing units. The recommendation which was made in this regard was oriented to assure, to as great a degree as possible, conformity of tenure with the physical design of the site, community planning objectives and needs, and the requirements of the mortgage insurance programs of the Federal Housing Administration.

General Marketing and Management Program Features—Planned Unit Development The plan for the BREAKTHROUGH site provides for detached and attached single family dwellings and multi-family dwellings with privately owned common property as an essential element of the development. The form of property tenure in a planned unit development can conceptually run the gamut from rental to cooperative and condominium to the traditional fee simple title. The characteristics of the Indianapolis housing market and the propensity toward home ownership as the preferred form of tenure, suggest that either the condominium or the condominium in conjunction with the traditional fee ownership be utilized in marketing the BREAKTHROUGH dwelling units.

The Condominium Approach Under the condominium approach (whether this involves attached, detached or multi-storied buildings) all dwelling units are conveyed in terms of fee simple title in a defined amount of dwelling space with an undivided interest in the common areas, usually in proportion to the size of the dwelling space. The individual purchaser arranges for the mortgage financing on his dwelling unit. Under the Indiana Horizontal Property Act, Chapter 349 of the Laws of 1963 (condominium law), the dwelling units are referred to as "apartments" and the purchaser of given dwelling unit is referred to as a co-owner. Policy with regard to the management and maintenance of the common areas is established by an "association of apartment owners" (usually a non-profit corporation) composed of all the co-owners. Such an association can, and usually does, contract with a professional management firm to carry out the maintenance of all common areas. The costs of this service are assessed against the individual co-owners either on the basis of the value of the services provided to the particular co-owner, or in those cases where the nature of the service is uniform throughout, is applied to co-owners on the basis of the proportion that the co-owner's dwelling area and undivided interest in common areas bears to the total condominium development. The details of the assessment practice are to be provided for in the by-laws of the given apartment association.

One of the key considerations in determining the practical applicability of the condominium approach to the BREAKTHROUGH site plan was the definition of common areas as regards the single family detached dwelling units. If the common areas were defined so as to include

the land on which these individual single family units are immediately situated, responsibility for the maintenance of that land would devolve on the apartment owners association through the agency of the professional management contractor. The costs of maintaining such space would be part of the costs of maintaining common areas and would be covered by the above mentioned assessments therefor. Given the fact that the land immediately surrounding the single family homes would be "common area," the individual purchaser would not have his own lot or any of the traditional possessory rights associated therewith.

Traditional Fee Simple Ownership with a Homes Association Fee simple title including ownership of land can be conveyed with regard to both single family detached and attached (townhouse) dwelling units. Under this approach the dwelling units are conveyed through properly platted lots.

Each purchaser also receives, as an incident of the conveyance of the individual lot and improvement, an easement in and over (a right to use) the common areas. The common area, in this case all areas not included within individual lots and not dedicated to the public (e.g., streets), are conveyed to a non-profit corporation, known as a homes association. The homes association usually contracts with a professional management company to handle the actual management and maintenance program and the costs therefor are assessed against the individual homeowner.

The principal distinction between this approach and the condominium approach lies in the fact that here management and maintenance generally stops at lot lines while historically under the condominium, management and maintenance goes to the exterior of the structure (and may even include the interior of the dwelling unit).

It should be noted, however, that through the declaration of covenants, conditions and restrictions which are binding on the homeowner (both through plat recordation and through the instrument of transfer) provision can be made for the association to provide for exterior maintenance of the building as well as maintenance of the individual lots. In the event that such provisions are utilized, there is little difference between the condominium approach and the traditional fee ownership approach other than the retention of the possessory rights that attach to the individual lot in the case of the latter. The importance of these rights as a matter of psychology would argue for fee ownership over the condominium approach.

Assurance of Quality Management Both the condominium apartment owners association and the traditional homes association can be constructed to provide the flexibility necessary to create effective management through the

declaration of covenants and restrictions. In both cases (subject to minor technical differences) control of management can be retained by the developer for a period of time (a few years, for example) by retaining controlling voting interest in the respective non-profit corporations. After the stipulated period of developer control has passed, the respective associations would be free contracting bodies and free to hire whatever management entity they might choose.

Conclusions and Recommendation A common form of ownership on the site is highly desirable from the standpoint of both marketability and management. In this context, it was felt that fee ownership of dwelling units would be the most successful approach. In the light of the potential administrative problems associated with a condominium approach to ownership of all 300 dwelling units, the most feasible approach (the path of least resistance) to marketability appears to be a conveyance of fee ownership in lots and buildings for all detached and attached single family homes and the use of the condominium form of ownership in the multi-storied buildings only. This program countenances one homes association for maintenance of all common properties which include all land not parcelled into specific lots. All dwelling unit owners would be members of the association. In the case of the multi-storied buildings, the residents would be members of the homes association for the purposes of the common areas outside the plot on which the building containing their units is located. They would, in addition, be members of an apartment owners' association for the maintenance of the common areas relating to the interior and immediate exterior of those buildings.

Both associations would contract with one professional management company to handle maintenance for all common areas. Provision for this arrangement would be made in the declaration of covenants and restrictions for both associations.

The foregoing approach is deemed best suited to accomplishing several of the principal goals (e.g., homeownership and administrative innovation) of the BREAKTHROUGH program within the context of the realities of the Indianapolis housing market. In addition, it allows the use of two flexible mortgage insurance programs of the FHA. The Section 203(b) market interest rate program would be used for all detached and attached single family homes with the possibility of converting to some 235 below market interest program financing for eligible moderate income families. The Section 234 program (also a market interest program) would be used for condominium ownership in the multi-storied buildings. Here also, conversion to the Section 235 program would be possible for a number of eligible families and individuals.



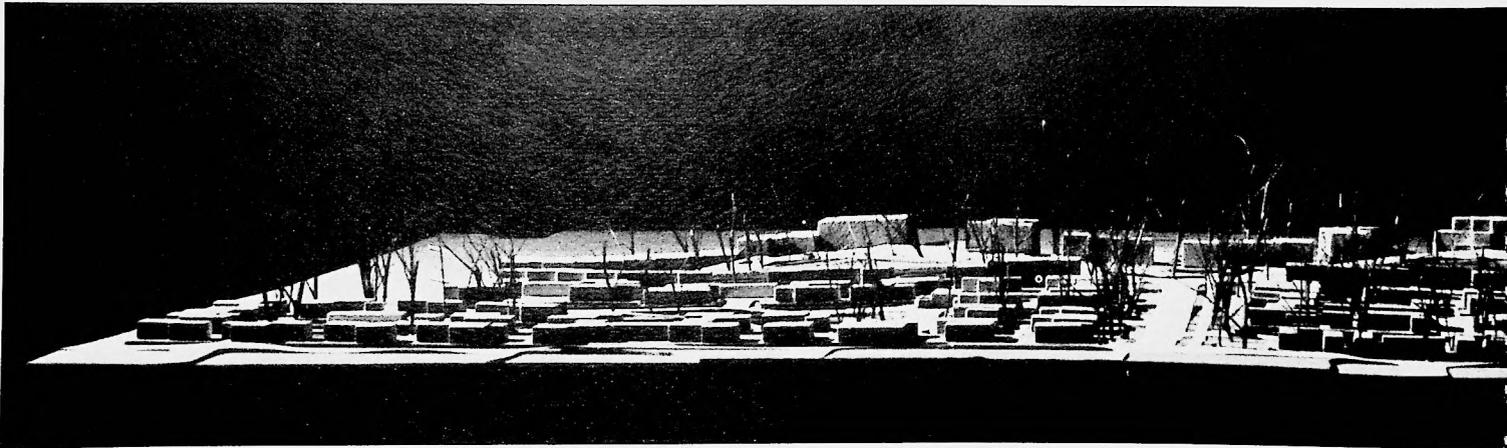
community liaison

Throughout the planning process in Tasks I and II, a community liaison program was conducted in close co-ordination with Indianapolis UNIGOV and HUD officials, the site developer, leaders in the broader community and neighbors around the BREAKTHROUGH site.

Community liaison was viewed as being of primary importance since the success or failure of OPERATION BREAKTHROUGH ultimately depends upon the response of the public. This response can be significantly affected by early publicity and the reaction of business and community leaders in the cities selected for prototype developments. The type, nature and timing of contact with the national public, the Indianapolis community and residents close to the site was therefore critical to BREAKTHROUGH's success in Indianapolis and nationally. A particular concern was that contact with the public not be established prematurely or without a specific intent. A reoccurring history of the early days of new federal programs is one of premature promises resulting in inflated expectations that often go unfulfilled. The overriding philosophy of the Indianapolis community liaison program was therefore to widely circulate accurate information in a timely fashion when there was certainty about the content of the information, and when there was a specific objective to be gained.

Shortly after Task I conceptual planning began, an approach to community liaison and a community liaison plan were established. Both were summarized in the Task I report. Key features of the approach and plan include:

- Allowing UNIGOV to control the flow of information in Indianapolis in a manner that keeps the overall community and BREAKTHROUGH neighborhood informed with minimum potential for misunderstanding.
- Conducting interviews with community and neighborhood leaders to uncover concerns and potential issues regarding BREAKTHROUGH that can be responded to in a positive fashion during project planning.
- Conducting briefings and discussions with neighborhood groups when policy directions and operating procedures have been sufficiently defined and agreed upon, so that UNIGOV and HUD are in the posture of having decisions and commitments to report to the community, rather than unanswered questions.
- Assisting the media in reporting factual material on BREAKTHROUGH through preparation of press releases and other supporting material.



- Maintaining continuous contact with key officials and community leaders through UNIGOV to sense potential issues before they surface, test key proposals before they are adopted, and generally have a finger on the pulse of the community.

Early in Task I more than 50 interviews were conducted to set the liaison plan in motion. Contacts were established and considerable data collected. Several key issues were uncovered and later responded to in the site plan. These included the serious need for parks and organized open space in the BREAKTHROUGH neighborhood, the strongly voiced concern that existing schools not receive increased enrollments, and strong support for home ownership as consistent with the lifestyle and aspirations of the surrounding community. Continuous contact was maintained with key neighborhood and community leaders throughout Tasks I and II. In many cases additional interviews were conducted to test reactions as planning proposals emerged. Continuous liaison was also maintained with numerous local government officials to test proposals and establish administrative review and approval procedures.

The first general community meeting in the BREAKTHROUGH neighborhood was held on

July 6, 1970, to present preliminary concept plans and test broad-based neighborhood reaction. Along with local officials, representatives of the Site Planning Team presented the plan to approximately 65 residents in a community meeting held near the site. After a lengthy discussion in which many thoughtful and pertinent questions were asked, the group reacted unanimously in favor of OPERATION BREAKTHROUGH in Indianapolis and the preliminary development plan for the site.

A second general community meeting was held in the BREAKTHROUGH neighborhood on August 10, 1970, after more than 400 circulars publicizing the meeting were passed door-to-door. This meeting was attended by approximately 80 local residents who also questioned the program and the plan thoroughly and voiced unanimous approval.

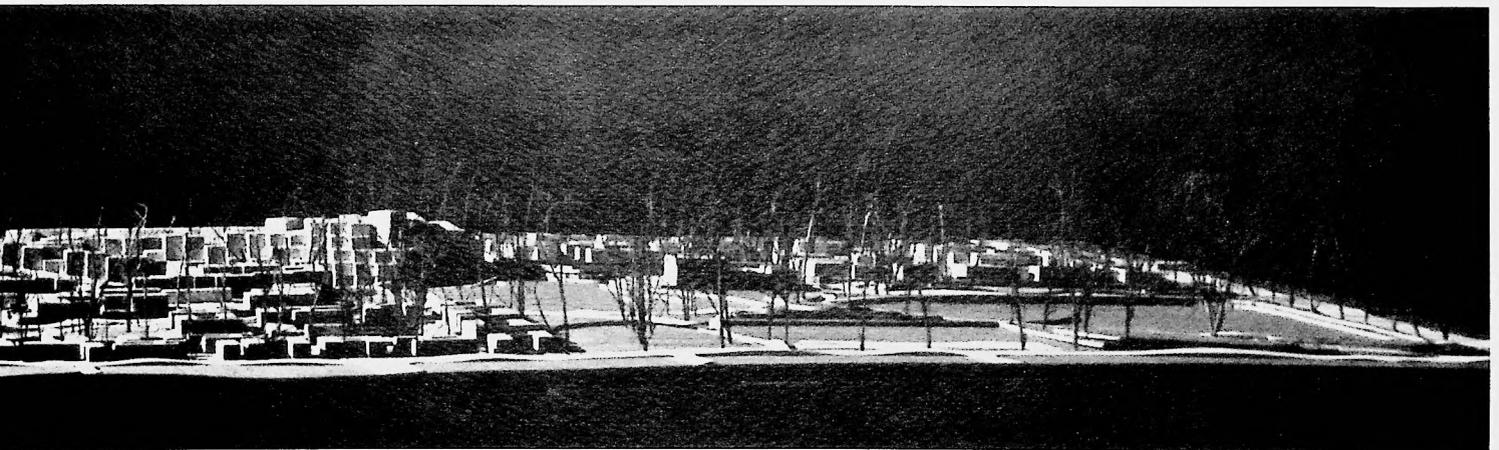
Additional meetings and continuous interviews will be conducted as land transfer is effected, and as the planning and development process progresses.

To assist in public presentations and accurate information distribution, a slide presentation was prepared illustrating steps taken during the planning process, the development plan, and detailed explanation of specific innovative developments such as the internal open space

system, discontinuous circulation system, the public park-Community/Visitor Center complex, school facilities, and unique site planning approaches that economize on land use distribution.

The Site Planning Team also prepared an information kit for use by UNIGOV officials in distributing information to the media. The kit includes aerial photographs and diagrams of the site, a current file of news releases, a HUD question and answer brochure, a general information summary on OPERATION BREAKTHROUGH in Indianapolis, and periodic progress reports on activities. This kit was designed to be easily updated as the project progresses.

The Project Team will continue assisting HUD and UNIGOV officials and the Site Developer in community liaison during the remaining two work tasks as well as throughout the development testing period. This assistance will continue in the form of policy and strategy recommendations; aid in the preparation of news releases and information summaries; participation in meetings and presentations; continuous interviews and follow-up testing; coordinating with the related activities of UNIGOV, HUD, the Site Developer and the Housing System Producers, and generally as a resource for all community-related planning activities.



contract documents—task 3

The site plan was further refined in light of changes to the number, type and manufacturer of various housing units and more complete information to the construction procedures and schedules of the Housing Systems Producers which at that time were assigned to specific areas on the site. Further refinement of all areas of the site budget took place at this time.

The established schedule required a construction start before the final decisions were made as to which housing units would complete the site plan. Site grading documents and storm and sanitary sewer documents were prepared for use in the first phase of construction. In each case assumptions were made as to the number and type of housing units which would eventually occupy then unassigned areas of the site so the utility systems could be designed. The bidding procedure allowed for continuing design because the construction contracts for the site were structured on a unit price basis. As the final choice of H.S.P.'s and the disposition of the units on the site were made, the reserved site parcel designs were executed and construction completed under established unit prices.

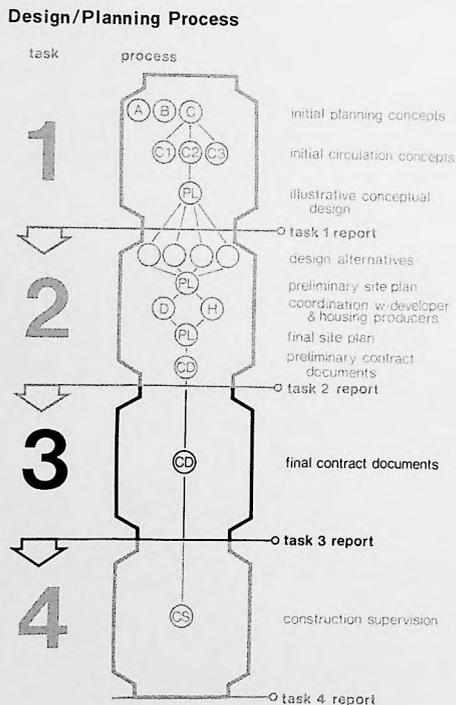
An "interface agreement" between the Developer and the H.S.P.'s was drawn which clearly established the individual responsibilities for construction of all of the site development elements. The developed building exterior design and color criteria were followed by the H.S.P.'s so as to help unify the overall site design.

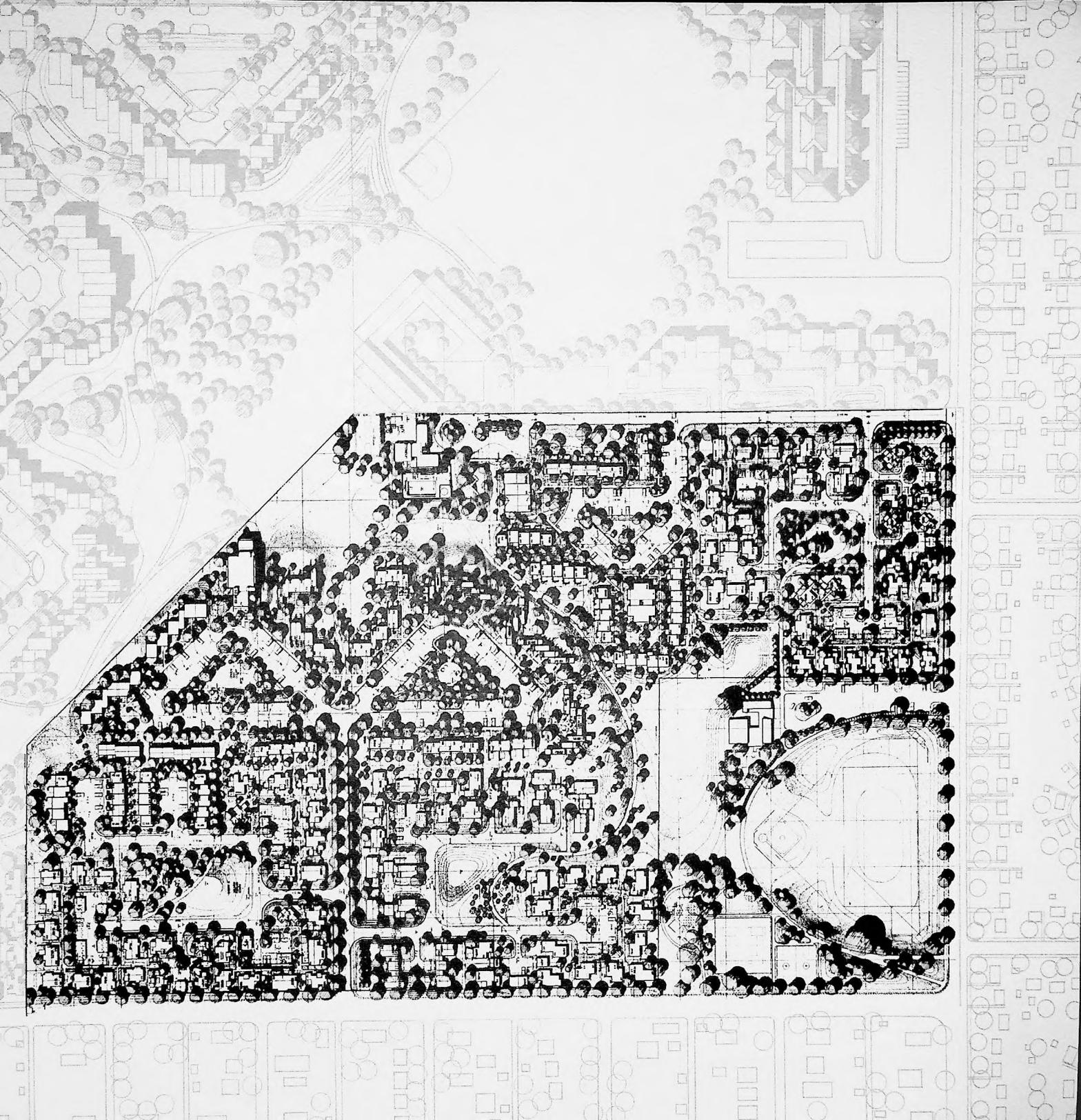
The H.S.P.'s prepared their construction documents for the housing units in coordination with: the documents prepared by S.O.M. for each site area; the "interface agreement"; and the "building exterior controls".

The Indianapolis private power, gas and water utility companies provided construction documents and installed their utilities to plans coordinated by S.O.M. and the Developer. S.O.M. then prepared the remaining site improvement, site amenity and ancillary facility contract documents. These included:

- a) the paving and curbs
- b) the club house and pool complex
- c) the playground equipment and play structures
- d) the carports
- e) the final grading and landscaping
- f) the signing and graphics

The various elements were bid and the contracts were awarded.







construction supervision—task 4

The HUD Prototype Site Developer has been responsible for the management control, inspection and coordination of all construction for the site development. S.O.M. as the Prototype Site Planner reviewed shop drawings and conducted observation of the construction work at various points in time. As a product of this observation, S.O.M. recommended to HUD that various corrections and additions be made to bring construction to the level indicated by the plans and specifications. HUD then evaluated the recommendations by their effect on the following items:

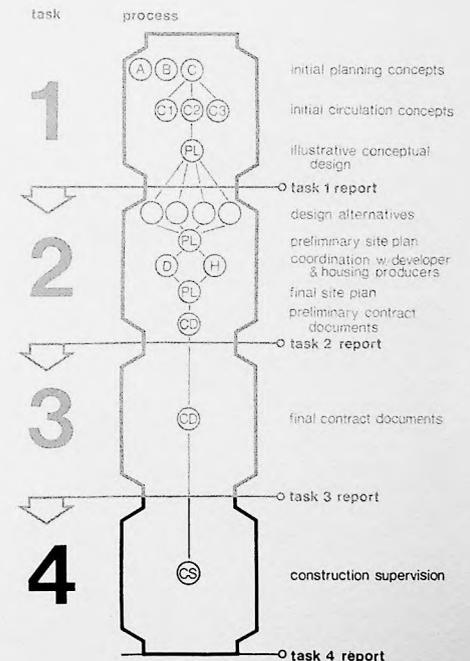
- a) the health and safety of the development
- b) the sequence and delay of the site construction schedule
- c) the sequence and delay of the H.S.P.'s construction schedule and procedure.
- d) the site development budget
- e) the marketability of the housing units

Results of HUD deliberations were translated directly as instruction to the Site Developer.

At the completion of construction the Site Developer will furnish HUD with a complete set of "As Built Drawings" which will reflect all deviations from the original working drawings.

Site Construction Photo Looking West

Design/Planning Process



final site housing

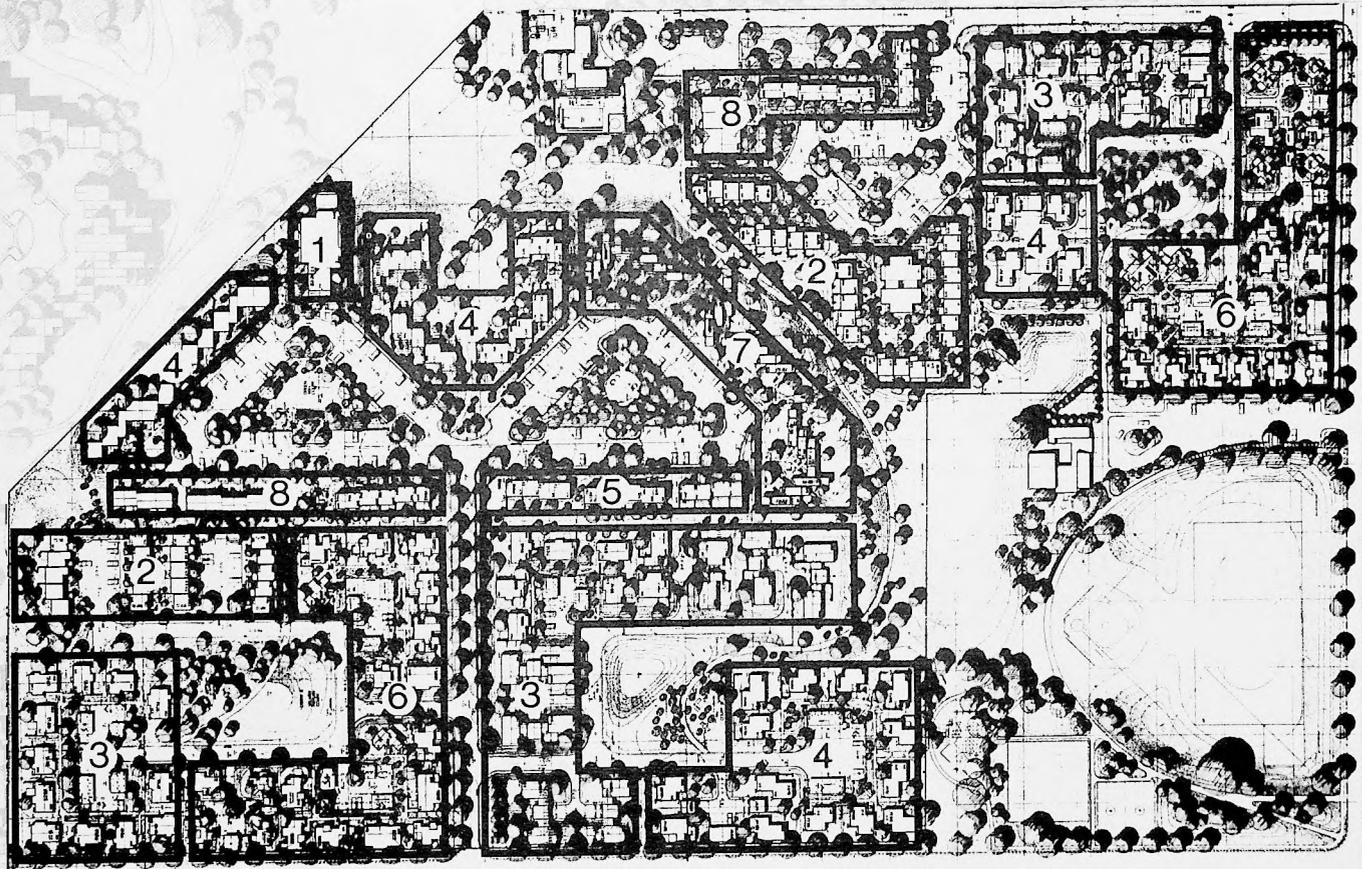
The housing systems finally assigned to the Indianapolis site were varied types. There are 295 housing units on the site including single family detached, single family attached and multifamily units. The sizes of the units range from 1 to 4 bedrooms. The housing systems also represent a variety of construction system types ranging from concrete panels to wood stressed skin modules.

Since the eight systems to be built on the site were such a broad cross section of the Breakthrough producers, it became apparent that coordination of the units into a unified site plan was of utmost importance. During preliminary planning two concepts for creating an organizing framework for the site were developed. These were contouring of the land and landscaping. As work progressed special attention was paid to the exterior finishes of the housing systems so they would blend and compliment each other. Site amenities such as the carports, trash container enclosures and fencing are of uniform design to further tie all areas of the site together. With the basic framework and the general site details developed the site plan accommodated change and the moving of housing systems as the need arose.

Final Housing Mix

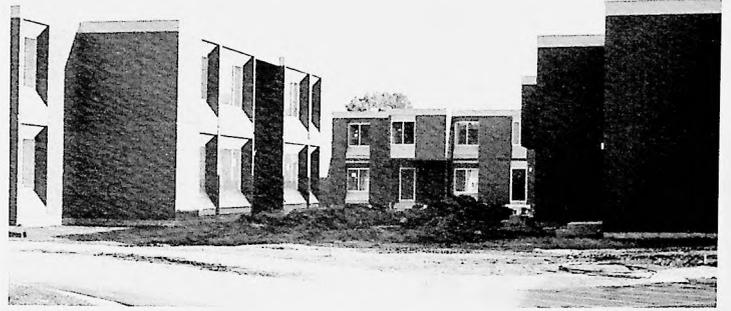
key	system producer	● single family detached		▲ single family attached			■ multifamily		total
		3 br.	4 br.	2 br.	3 br.	4 br.	1 br.	2 br.	
1	FCE Dillon Inc.						30	6	36
2	General Electric Company				32	16		8	56
3	Home Building Corp.	28	17						45
4	Material Systems Corp.	11	7	12	16	4			50
5	National Homes Corp.			4	8	2			14
6	Pantek Corp.	26	14						40
7	Pentom Inc.			6	14				20
8	Scholz Homes Inc.			8	9	9		8	34
total		65	38	30	79	31	30	22	295

Housing System Producer Locations

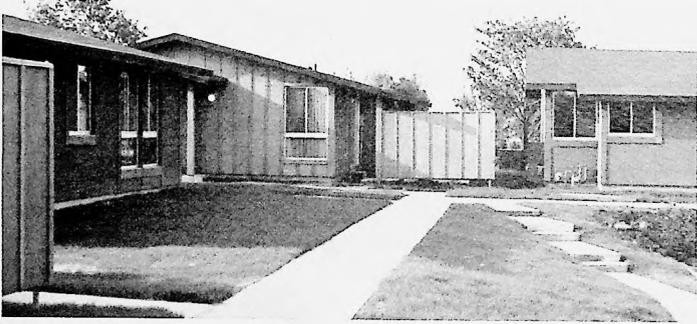




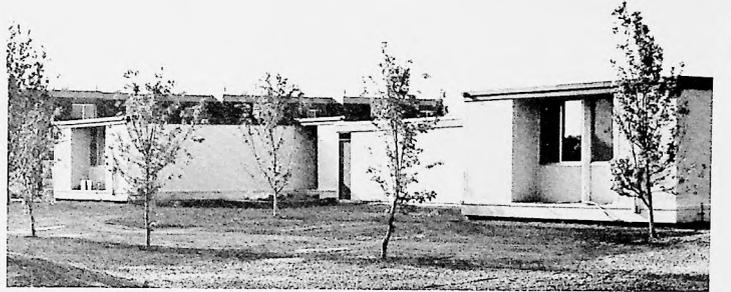
FCE Dillon Inc.



General Electric Co.



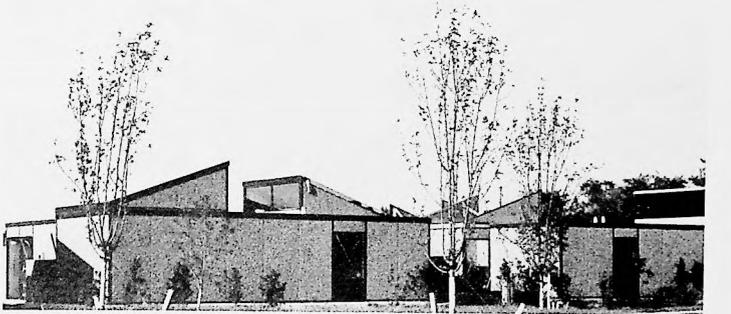
Home Building Corp.



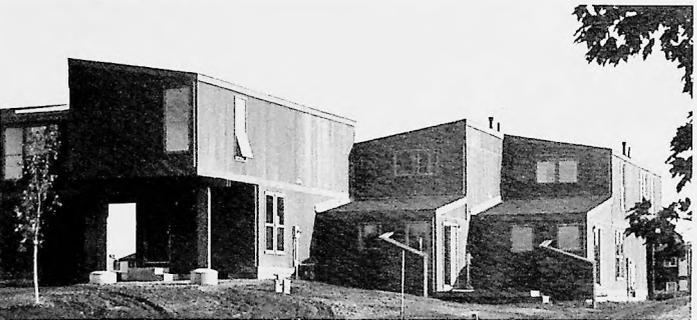
Material Systems Corp.



National Homes Corp.



Pantek Corp.



Pentom Inc.



Scholz Homes Inc.

housing system producers

FCE • Dillion Inc. supplied a five story multifamily elevator building. It is sited in such a way that the first floor is one level below the entrance. The one and two bedroom apartments open onto balconies which run the length of the unit.

The Dillion system is concrete panels which were cast in Akron, Ohio and shipped via truck to the site. The panels are structural and used for the bearing walls, floor and roof members. A crane was used to hoist the panels into position where they were welded and grouted.

The interior finishes include vinyl tile or carpet on the floors, drywall on the walls and acoustic spray paint on the ceilings.

The building contains a community room on the entry level. The room is equipped with a small kitchen and is available for use by the building residents.

General Electric Co. has supplied two story single family attached units and a two story multifamily unit. The system is a factory finished module constructed with steel studs. Each module was assembled and factory finished in Pennsylvania, then shipped by truck to the site. A crane was used to hoist the modules onto the cast in place concrete footings and foundation walls. Each townhouse consists of four modules while 2½ modules are used for the apartments.

For acoustic reasons, the units have been constructed with complete floor and ceiling framing in each module. This provides a good sound barrier in the double floor system when the modules are stacked.

The exterior finish is vertical wood siding. The joints between the modules have been concealed with a plywood fascia.

Home Building Corp. supplied single family detached units. The houses consist of two wood half modules which are joined together by means of a 4' wide center module. The units were factory finished, interior and exterior in Sedalia, Mo., and shipped to the site by truck.

As work progressed on the construction of the

units, the foundations were changed from continuous concrete block on concrete footings to grade beams on concrete point footings.

The method of placing the modules also changed. At first the units were rolled from the truck to the foundations. Finally a crane was employed to lift the modules onto the foundations.

The one story units are faced on the exterior with vertical wood siding. Many of the units have garages which are attached to the main house.

Yard fencing for the units is integral to the house walls and is a continuation of the house wood siding.

Material Systems Corp. built both one story single family detached and two story attached units. The system is a factory finished module which is made up of plastic composite panels. The modules are positioned side by side for the detached units and stacked vertically for the attached units. The panels for the single family detached units were assembled into modules in a factory in Indianapolis and trucked to the site. The attached units will be made in San Diego, California and brought to the site by truck or rail.

A crane is used to place the modules on the foundation which are precast reinforced concrete grade beams on point concrete footings.

The exterior finish is an epoxy and sand spray which is factory applied.

National Homes Corp. produced single family attached units on the site. The two story townhouses are aluminum frame stacked modules. The units were factory finished in Lafayette, Indianapolis and trucked to the site. A crane was used to stack the modules side by side parallel to the front of the unit. Four modules are paired and stacked to create two units with the same bedroom count.

The edge foundations consist of concrete block on concrete footings. Steel beams on concrete footings are used on the interior where the modules are paired.

Site work on the module was limited to the mechanical hook ups and the application of trim to cover the interior and exterior module joints.

Interior finishes include drywall and wood paneling and carpeting and tile. The exterior is a vinyl aluminum overlaid plywood with wood trim.

Pantek Corp. built one and two story single family detached units. The two story units are designed in such a way that the second floor bedrooms have connecting patios on the first floor roof.

The system is made up of composite panels which are approximately 4' X 8'. These panels are structural and used for the walls. Steel channels are used for the second level floors and roofs. The exterior finish of the panels is stone chips and ceilings in an epoxy mastic. The interior finishes for floors, walls and ceilings were field applied.

The interlocking panels are placed on concrete floor slabs and footings which are cast at the site. The panels were made in Boulder, Colorado and shipped to the site. A crane is not required to erect the panels.

PENTOM, INC. has produced two story single family attached units. The system is a factory finished "stressed skin" wood module. Each unit is typically made up of two modules stacked one upon the other overhanging at one end and producing a two story space in the living room under a sloped roof. The units are sited in a staggered and stepped fashion in clusters.

The modules were made in Bloomington, Minn., and trucked to the site. They were hoisted by crane onto preset concrete block foundations. The interior finish is drywall and the exterior is a vertically grooved plywood surface.

SCHOLZ HOMES, INC. supplied a multifamily eight dwelling unit structure in traditional style and single family attached units in traditional and contemporary style. The units are made of factory finished modules which are one level of the front or the back half of several adjacent houses. The modules were shipped to the site by truck from the factory and lifted into places by a crane.

community and site facilities

The hierarchy of the open space network on the site is the main design element linking the various housing types and cluster areas of the development together. The spaces consist of the private yards for individual homes which surround semi-private court spaces. The semi-private areas are connected with transition links to the major community open spaces. These open space areas are for pedestrian use and the usage is reinforced and defined by the types of activity elements placed in them. Semi-private court areas are designed for the joint use of the residents whose houses surround these green areas. Small tot lots consisting of a play structure for climbing and sliding are located here along with picnic benches and trash baskets. Pedestrian and bike paths run through these parks and connect them to the open space network leading to the larger areas.

There are three major recreational spaces which have been developed. One, the community park at the corner of Tibbs Avenue and 21st Street, is for the use of both the site residents and the surrounding community. It is equipped with sports fields, tennis and basketball courts, play structures and picnicking facilities. It will be operated by the Indianapolis Parks Department.

Another major open space is a grassy field for strolling or informal recreational activities. At the northern edge of this field is a terraced grass amphitheater.

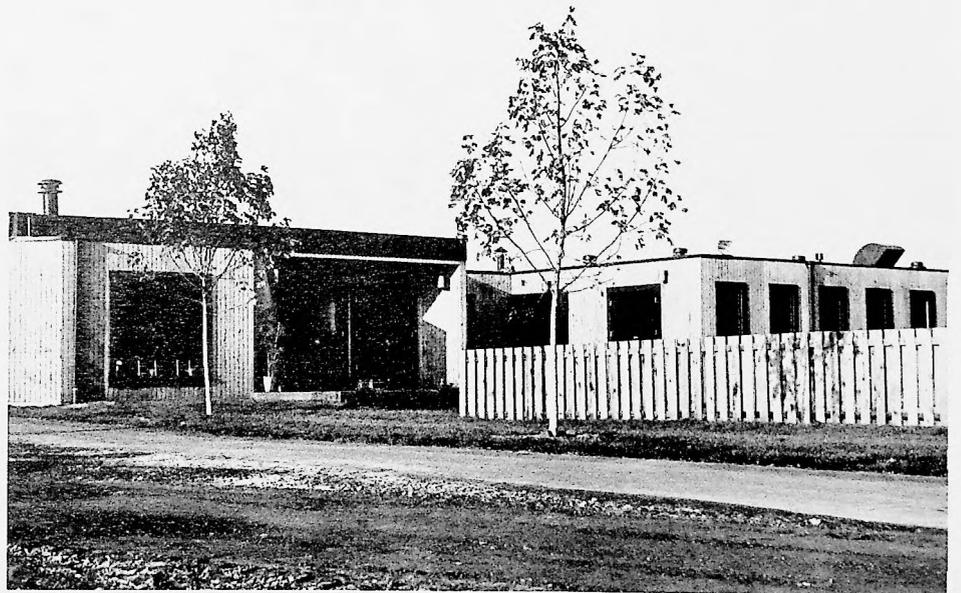
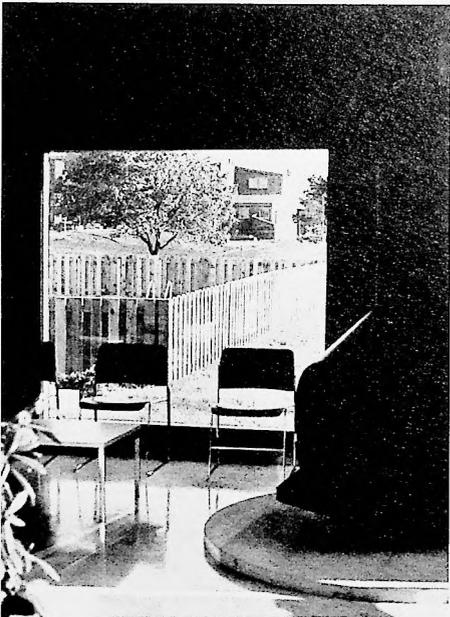
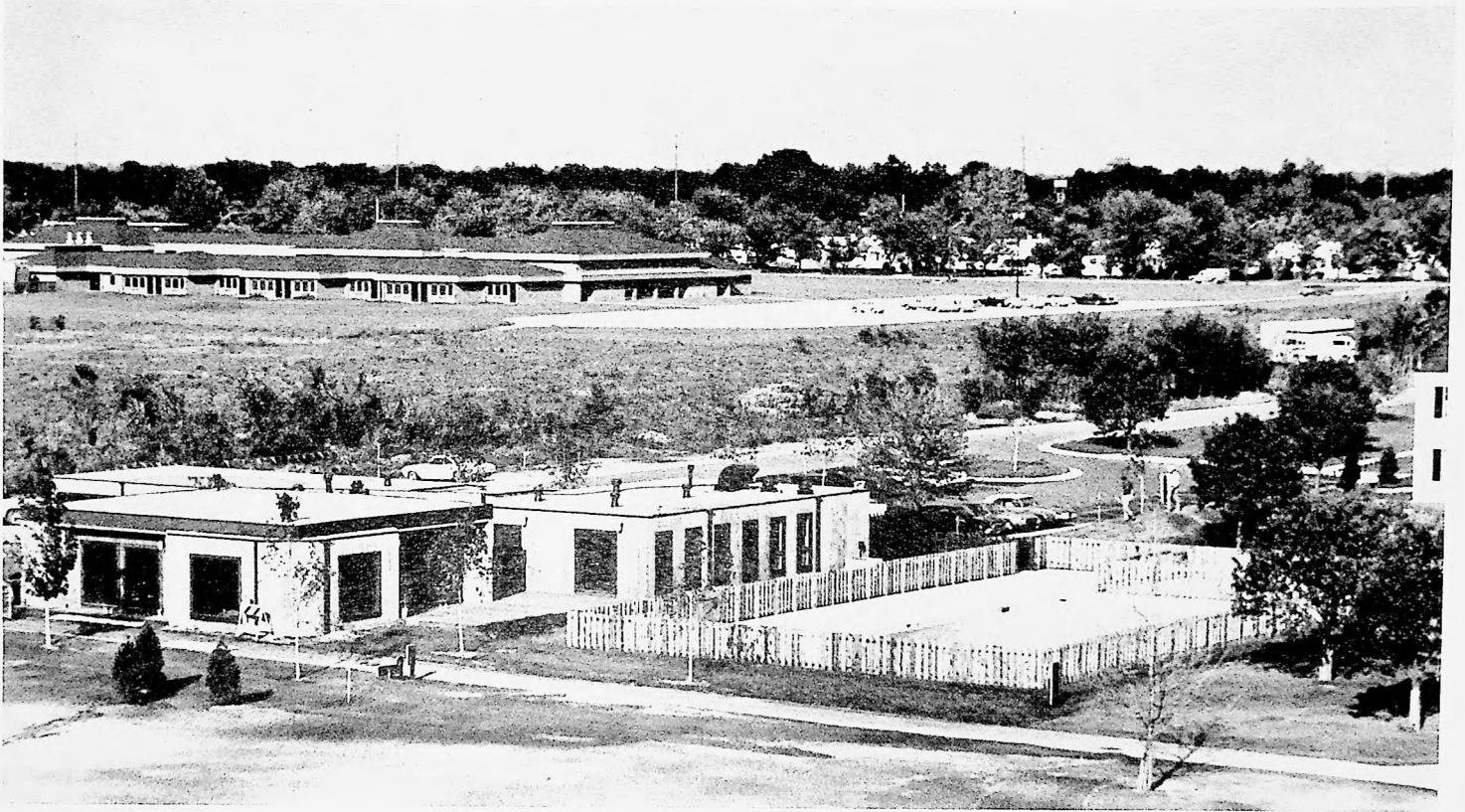
The third major recreational area is a clubhouse and swimming pool complex which is reserved for the site residents. The clubhouse facilities, designed to serve all age groups, include a large room with a fireplace for meetings and parties, a teen room and a kitchen and site management facilities. The clubhouse also has a paved area and a garage adjacent to it which will be used for storage of site maintenance vehicles and the residents' boats and campers.

A basketball court and a special play area consisting of a large climbing assembly with bridges, a slide, sand play area, see-saws and swings is included near the clubhouse.

The clubhouse overlooks the swimming pool which has locker and shower facilities. The pool is surrounded by a sun deck and includes a small children's wading pool.

The clubhouse is temporarily being used as the project marketing center and has displays and information of the OPERATION BREAKTHROUGH Program as well as information of the site development and detailed information on the housing units.

Clubhouse





conclusion

The work presented in this report represents the four phases in the BREAKTHROUGH site planning and design process, final site plan, detailed design and preliminary contract documents, preparation of final contract documents and inspection of site development.

As noted in the introduction, the site planning and design process is comprehensive in scope and interdisciplinary in approach including legal, economic, sociological governmental and systems analysis inputs as part of the total planning and design process. All of these activities continued through the four phases of work toward the building of a BREAKTHROUGH community in Indianapolis.

OPERATION BREAKTHROUGH in Indianapolis has offered a unique opportunity for technological, design, finance, legal/administrative, marketing and sociological innovation. Indianapolis has offered a perfect setting for the building of a successful BREAKTHROUGH community and achieving the broader goals of the BREAKTHROUGH program.

HUD Library



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