

코넬대학교 캠퍼스 주택“Maplewood Park”의 이용후 평가

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A Post-Occupancy Evaluation of Maplewood Park : Cornell University's Campus Housing

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요 약

본 연구의 대상지는 미국 뉴욕(New York)주 이타카(Ithaca)시에 있는 코넬대학교(Cornell University)의 미혼자와 기혼자 대학원생 및 그 가족을 위한 캠퍼스 주택인 Maplewood Park이다. 연구자인 동시에 디자이너의 입장에서 필자는 다음의 4가지 방법을 가지고 이 Maplewood Park에 대한 이용후 평가(post-occupancy evaluation)를 실시하였다: 1)물리적 흔적 관찰(observing physical traces), 2)행태 관찰(observing behavior), 3)면담(interviews), 4)설문지(questionnaires). 본 연구는 주거 환경의 옥외공간이 가지고 있는 물리적 특징과 성질에 초점을 맞추었다.

본 연구는 행태 자료 수집에서부터 완성된 주택단지의 개선을 위한 디자인 제안까지의 전 과정을 보여주며 주거 환경의 실제 이용자인 주택 단지 거주자로부터 획득한 체계적이고 객관적인 행태와 태도에 관한 자료에 근거하여, 장래에 있을 유사한 주택 단지 건설을 위한 디자인 기준을 제시하고자 한다.

1. Introduction: Problem Statement and Research Objectives

Deasy (1974, p.5) noted that “the basic purpose of a house is to provide a place where a group of individuals can co-exist with a minimum of friction and a maximum of satisfaction.” Designers must know what the residents want and do not want from their housing, in order to achieve behavioral settings where human activities can take place

with satisfaction. Useful systematic methods such as interviews, questionnaires, and observations are available for finding out what works well and what does not work well for users of designed environments. As a way of learning how a project works in practice in some systematic manner, researchers carry out post-occupancy evaluation(POE). According to Zimring and Reizenstein (1980, p. 429), “POE is the examination of the effectiveness for human users of occupied de-

본 논문은 필자가 1992년 미국 Cornell University에서 취득한 MLA(Master of Landscape Architecture) 학위논문 (제목 : A Post-Occupancy Evaluation of Maplewood Park : Cornell University's Campus Housing)을 요약한 것임.

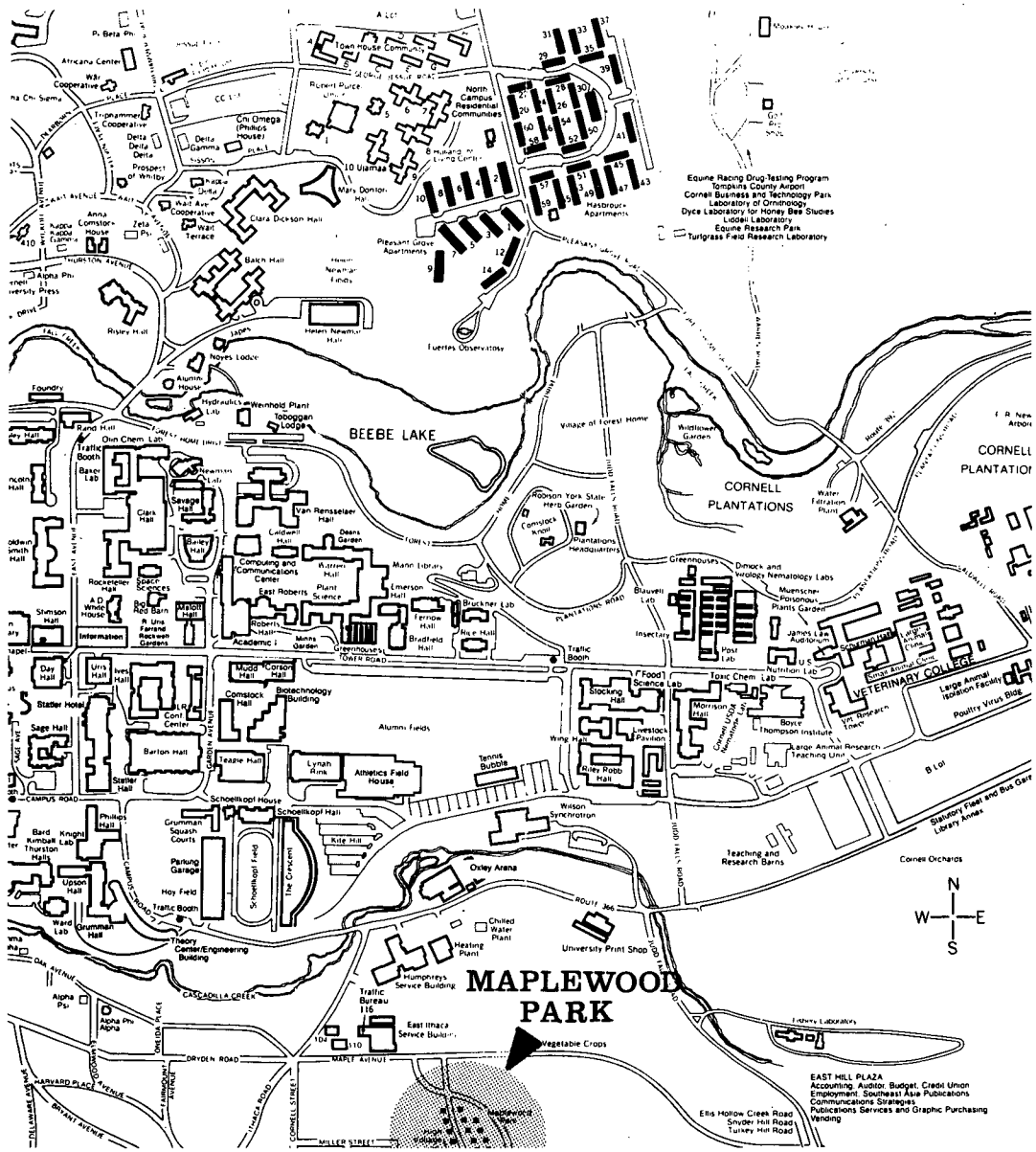


Figure 1. Maplewood Park location map. (Cornell University, *Housing for Student Families 1990-91*)

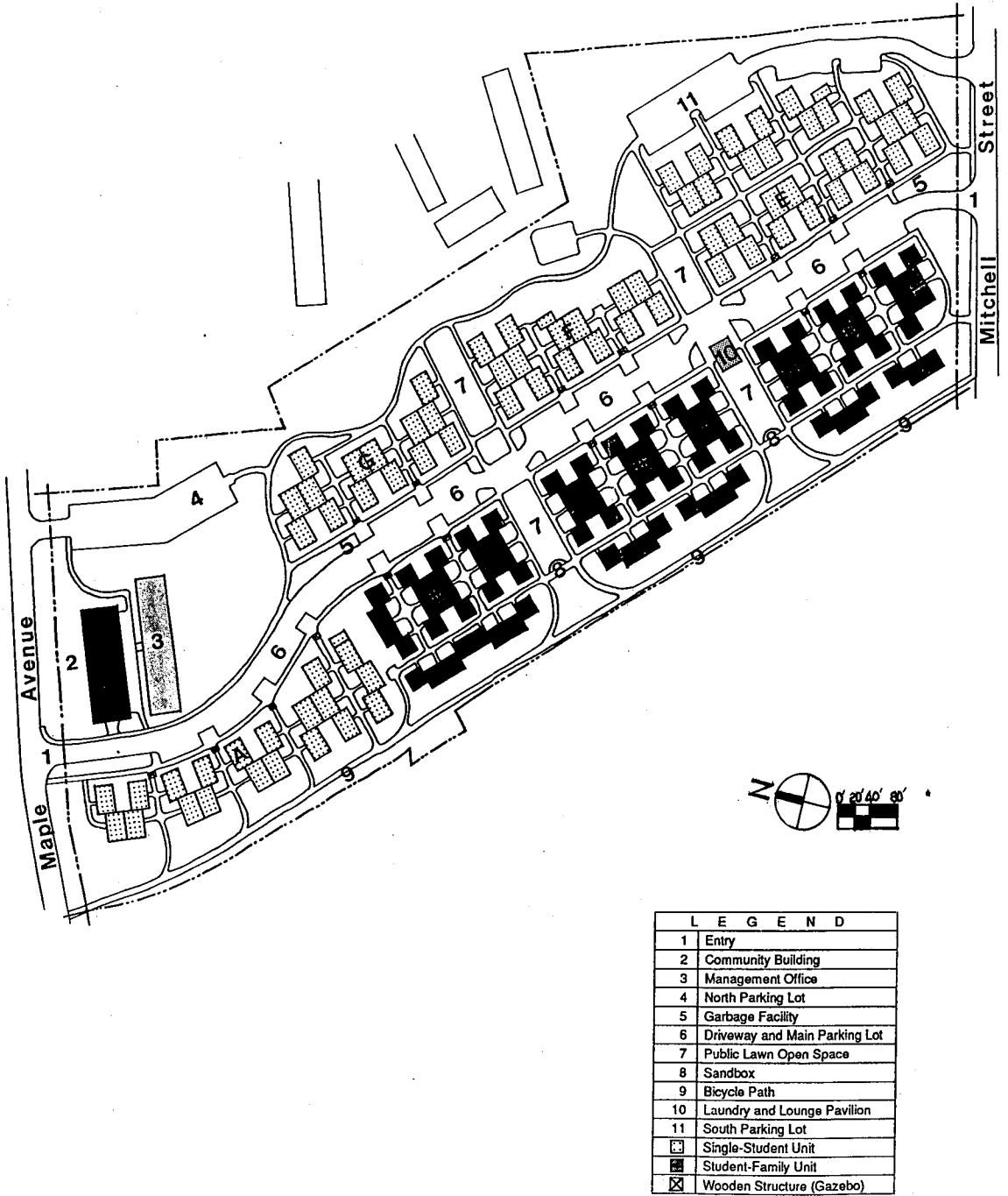
signed environments.”

This researcher conducted a POE of a newly opened campus housing, Maplewood Park, in order to investigate what were the things that the residents liked and disliked about their apartments and what residential environment attributes worked and did not

work.

Maplewood Park, located in Ithaca, New York, is a Cornell University campus housing complex for single and married graduate students and their families.

The initial problem statement of this research investigation was as follows: Are



*Maplewood Park has seven subsections of apartments from A to G.

Figure 2. Simplified site plan of Maplewood Park.

residents of Maplewood Park satisfied with the outdoor physical attributes and characteristics of their housing environment?

The specific goals and objectives of this study are:

(1) to develop design criteria for creating user-responsive outdoor space in similar types of housing, based upon the research findings drawn from the post-occupancy evaluation focusing on the exterior spaces of Maplewood Park ;

(2) to make specific design recommendations, if there is room for improvement, for improving the outdoor spatial quality of Maplewood Park.

2. Description of the Site

Cornell University has developed 170 units of graduate student housing by using factory manufactured modular construction. Parking for 241 cars on 17 acres of university property is also included. The community is comprised of 90 two-bedroom student family units, 77 single student four-bedroom units, three single student efficiency units, two laundry/lounge buildings, and an existing building partially renovated for management office and meeting room use.

Maplewood Park, which opened in August 1989, is a new apartment village situated on the southeast side of the Cornell University campus (see Figure 1).

The residential complex has a landscaped parklike setting. The student-family units are grouped separately from the single-student units in the complex (see Figure 2). The apartments are in one-story buildings arranged around various courtyard configurations, and each apartment has an outside entry.

The student-family apartments have one bedroom, a study, a bathroom, a kitchen, a dining counter, a living room, and an attic storage area (see Figure 3). The single-student apartment have four single bedrooms, two bathrooms, a kitchen, a dining area, a living room, and an attic storage area (see Figure 4).

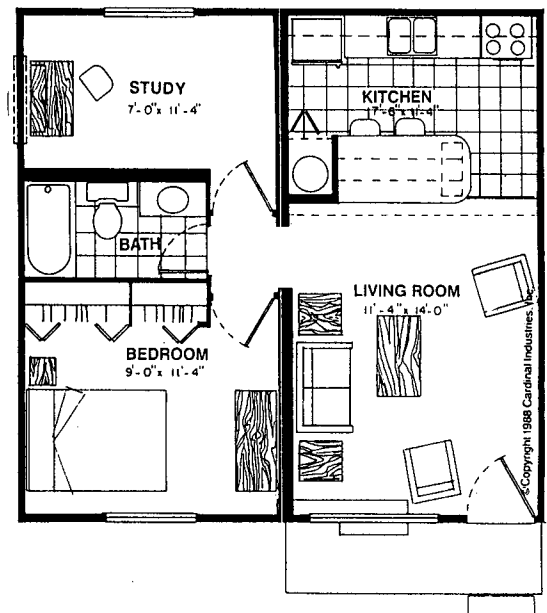


Figure 3. Typical floor plan of student-family apartment.

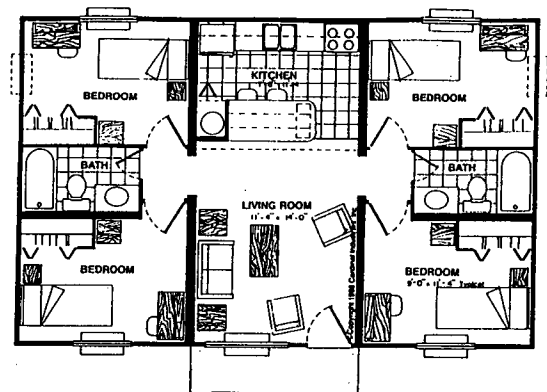


Figure 4. Typical floor plan of single-student apartment.

3. Methods and Procedures for the Study

The following research methods were used : (1) observing physical traces, (2) observing behavior, (3) interviewing, and (4) using questionnaires. This research study focused on exterior spatial aspects of the apartment complex such as overall image, arrangement of apartments, site design, and landscaping. Research into dwelling interiors was excluded. Detailed research methods were as follows.

Observing Physical Traces

Physical traces left by the residents were observed and recorded descriptively by the researcher. The researcher considered the categories of physical traces for gathering data on the residents' behavior, as identified by Zeisel (1984, p.100).

Observing Behavior

The researcher employed casual observation techniques and conducted observing behavior as a secret outsider. The researcher considered and applied the elements in environmental behavior observation, as presented by Zeisel (1984, p.124).

Interviews

The researcher also conducted interviews. For this study, the researcher employed an unstructured and in-depth face-to-face interview style.

The following is a list of general topics covered during the interviews:

- drainage
- exterior aspects of the apartment
- garbage facility
- gazebos
- landscaping
- lighting
- mail delivery system
- maintenance
- noise
- parking
- pavement and walks
- pavilion for laundry and lounge
- personalization
- public lawn open space
- safety
- sandbox for children's play
- seating
- sense of community
- signs
- visual privacy

Interviews were recorded on a tape recorder for later transcription, and the recorded interviews were paraphrased and summarized.

Questionnaires

Questionnaires were also used. For this study, a questionnaire was constructed after analyzing the results of casual observations of behavior and interviews.

The questionnaire consisted of three parts. The first part consisted of open-ended questions, and the latter two of closed questions (see Maplewood Park Resident's Questionnaire).

Rating scales were used for the second part of the questionnaire. The level of satisfaction with and the level of importance of the residential environment attributes were evaluated by rating scales. The scale points

- bicycle path

were presented as numerical values from 1 to 7 on a seven-point scale.

The questionnaire was in a self-administered format to be filled out by the respondent.

Data Collection

The data collection for analyzing the design and use of the built environment was conducted by the four research methods. In April and May, 1991, primary data collections were conducted by observing physical traces, observing behavior, and interviewing, primarily for the purpose of constructing the questionnaire. Questionnaires were distributed to, and collected from, the residents in May and June, 1991. During the distribution and collection of questionnaires, data collection by the other three methods were also carried out simultaneously. During the summer, further collections of data were intermittently conducted, until finally in early October, 1991, all data collection procedures were finished. The following describes the procedures for collecting data by the four methods.

Observing Physical Traces

Observing physical traces was carried out with consideration for maintenance schedules because, for example, early morning cleanups might obliterate the signs of the past day's activities. Photographs were taken of observed physical traces.

Observing Behavior

Observing behavior was conducted at certain hours of the day, such as the school-

departure hour in the morning, at lunch time, and the time when residents likely came home from work and had their evening meals. Observing behavior during the weekends was a good source for this research as well. Photographs of observed behavior were also taken.

Interviews

The researcher conducted personal interviews with residents and maintenance personnel. As of March, 1991, 211 single students (97 females, 114 males) and 87 student families (including about 30 children) lived in this housing complex. As representative samples for the interviews, eight single (four female and four male) and eight married (four female and four male) residents were selected from the Maplewood Park population. The researcher contacted all interviewees by phone in advance of the interviews.

Questionnaires

After analyzing the results of casual observations of behavior and the results of the interviews, a questionnaire was developed. The researcher then pre-tested the first draft of the questionnaire by trying the questions out on a group of 10 residents.

The researcher distributed the revised questionnaires personally. Out of the whole population of 385 residents at Maplewood Park, the questionnaires were distributed to 251 residents during the survey process (the remainder of residents were not home at the time). From these 251 residents, 122 responded to the questionnaires. Of the 122 responses, nine questionnaires were not used in the data analyses because they were in-

complete. Accordingly, 113 questionnaires, out of 122 questionnaires, were finally used for the data analyses. The total effective response rate was 45.02%.

Data Analysis

Data collected by observing physical traces and observing behavior were qualitatively analyzed in the descriptive manner. Data collected by interviews were analyzed qualitatively.

Questionnaire data were analyzed by several methods. The responses to open-ended questions were analyzed by the same method as were the interviews. Furthermore, however, the responses were quantitatively analyzed in terms of descriptive statistics: frequency and percentages of responses. For analysis of the responses to the multiple-choice questions of the second and third parts of the questionnaire, four statistical methods were used: frequency distributions, mean, t-Test, and correlation coefficients.

4. Results of the Study

Findings From Observing Physical Traces and Behavior

Viewing the apartment complex as a whole, student-family housing units rather than single-student housing units exhibited personalizing behavior, displaying personal items outside the apartments. At student-family housing units, there was some evidence of attempts to grow flowers or vegetables in the front yards of the apartments.

Public outdoor recreational lawn open spaces appeared in excellent physical condition, well maintained, with no evidence of

litter. Although some benches were provided in the open spaces, most of them were rarely used. Personal items, such as bicycles, tricycles, and other toys were often placed around the sandboxes.

The building exterior at Maplewood Park appeared to be well maintained and in excellent physical condition. There were no signs of vandalism. At student-family housing units as opposed to single-student housing units, personal items, such as chairs, laundry hung out to dry, barbecue grills, tricycles, and other toys, were placed outside the apartments. There were a few shortcut paths across the lawn areas around the apartments, but they were not worn yet. The wooden structures (gazebos) at the entrance to each apartment cluster lack shade trees for protection, but there was evidence of an attempt to grow creepers on one gazebo. The courtyards in the middle of the clustered apartments were sometimes used for outdoor meals or small gatherings, especially on fine days.

Findings From Interviews

Merits of the Residential Environment

- Appearance of apartment (arrangement, single-story building, clean-looking, look-alike, color of doors, color of house, finishing)
- Bicycle path
- Condition of pavement throughout the apartment complex (texture, color)
- Courtyards in the middle of the apartment clusters (function, picnic tables, brick pavement)
- Garbage facility (location, capacity, color of garbage dumpster, garbage dumpster screens)

- Landscaping (plantings, lawns, shrubs)
- Lighting (condition of lighting at night, style of light poles)
- Mailboxes (grouped)
- Maintenance (ground maintenance, immediate repairs)
- Natural surroundings (areas around apartments)
- Public lawn open space (including sandboxes)
- Railings (function)
- Safety within the apartment complex
- Seats (benches) throughout the complex (location, comfortable, nice-looking)
- Sense of community (good neighbors, student housing)
- Wooden structures (gazebos) at the entrance to apartment clusters
- (location)
- Lighting (insufficient in some areas, porch light too bright)
- Mailboxes (too small, location)
- Maintenance (no immediate upkeep for plantings)
- Noise (from early ground maintenance)
- Number signs of apartments (not reflecting, small)
- Parking (not enough spaces, arranged along driveway in middle of complex, parking fee, location of visitor parking lot)
- Pavement (slippery, torn up in some parking areas, damaged due to overuse of salt)
- Pavilion for laundry and lounge (not enough laundry facilities)
- Pergolas next to sandboxes (not providing shade)
- Public lawn open space (underused)
- Rent (expensive)
- Seating facility (benches and picnic tables lack shade and protection)
- Signs (confusing at some places)
- Smoke from the chimneys of the heating plant located to the north of the complex
- Spaces in the rear of the apartments (unusable small lawn spaces)
- Use of chemicals on grass (strong chemicals, not enough advance notice)
- Visual privacy problem because of facing windows
- Wooden stakes for speed reduction placed on driveway in the middle of the complex

Drawbacks of the Residential Environment

- Appearance of apartments (look-alike, prefab, color, arrangement, direction of apartment orientation, small porches, porches lack cover, color of doors)
 - Drainage (cannot cope with heavy rains)
 - Front yards (small)
 - Garbage facility (location, heavy dumpster lids, dumpsters too tall for short persons)
 - Gazebos (lacking function, lacking covers, not providing shade)
 - Inequitable distribution of environmental facilities (courtyards, picnic tables, plantings)
 - Lack of opportunity to get acquainted with neighbors
 - Lack of playgrounds and structured play equipment for children
 - Lack of sidewalks leading to East Hill Plaza (dangerous for pedestrians)
 - Lack of storage facility for bicycles
 - Laundry facility at community building
- As can be seen from the listings above, some residential environment attributes were judged both favorable and unfavorable, depending on individuals' viewpoints, perceptions, preferences, interests and adaptability.

Findings From the Questionnaires

General Information on Questionnaire Respondents

Following are the results from the questions of the third part of the questionnaire (see Maplewood Park Resident's Questionnaire). 20.3% of respondents lived in subsection A, 15.9% in subsection B, 22.1% in subsection C, 8.0% in subsection D, 21.2% in subsection E, 6.2% in subsection F, and 6.2% in subsection G.

Most respondents (66.1%) had lived at Maplewood Park for 6 to 12 months ; 23.2% had lived there for over 18 months ; 8.0% for less than six months ; and 2.7% for 13 to 18 months.

An even number of female and male residents responded (56 each, with one questionnaire missing data on the question of sex), and the numbers of single and married residents were also even at 56 each (one respondent classified self as "Other").

As for the age distribution of respondents, 32.1% were younger than 25 years, 49.5% were 25 through 29 years of age, 13.8% were in their thirties, and 4.6% of respondents were over 60 years of age.

Of the respondents, 55.4% classified themselves as white and 33.9% as Asian. The remainder was equally distributed between black, Hispanic and "Other." One person gave no answer to this question.

Three-quarters (75%) of the respondents were graduate students, and 20% were students' spouses. The remainder was evenly distributed between undergraduate students and others (2.7% each). One questionnaire had no information on academic status.

When asked "Would you recommend

Maplewood Park to your friends if they were looking for a place to live?," 37% said they "probably would." An additional 4.5% indicated they "definitely would," while 23.4% said they "probably would not" and 15.3% "definitely would not." (19.8% had no opinion).

Residents' Evaluation of the Residential Environment

Following are the results from the first part of the questionnaire. Tables 1 and 2 show the frequency distributions of advantages and drawbacks, respectively, of the residential environment. As the tables show, some residential environment attributes were seen as having both advantages and drawbacks. It is the opinion of this author that the differences in evaluation of the environmental attributes are based on individuals' personal preferences and value standards.

Table 1. Advantages of Maplewood Park

Residential Environment Attributes	Frequency	Percentage
1. Landscaping	51	29.6%
2. General maintenance	25	14.5%
3. Courtyards between apartments	20	11.6%
4. Public lawn open space	15	8.7%
5. Appearance of apartments	6	3.5%
Gazebos	6	3.5%
Lighting	6	3.5%
6. Arrangement of apartments	5	2.9%
Sandbox for children's play	5	2.9%
Seating facilities (wooden benches)	5	2.9%
7. Parklike settings of the apartment complex	3	1.7%
8. Others	25	14.5%
*No response	19	

Table 2. Drawbacks of Maplewood Park

Residential Environment Attributes	Frequency	Percentage
1. Smallness of porch and front yard	23	15.6%
2. Poor drainage	16	10.9%
3. Insufficient ground maintenance	10	6.8%
4. Bad choice of plant materials	9	6.1%
5. Inequitable distribution of plants	8	5.4%
6. Appearance of apartments	7	4.8%
Lack of visual privacy	7	4.8%
7. Insufficient parking spaces	6	4.1%
8. Lack of structured playground equipment	4	2.7%
Inadequate lighting	4	2.7%
Dysfunctional gazebos	4	2.7%
9. Orientation of apartments (facing north)	3	2.0%
Early maintenance noise	3	2.0%
Inequitable distribution of picnic tables	3	2.0%
Insects in summer	3	2.0%
Lack of full porch cover	3	2.0%
10. Others	34	23.1%
* No response	24	

Satisfaction With, and Importance Placed Upon, the Residential Environment

The results of ratings of residential environment attributes with regard to level of satisfaction with and level of importance placed upon attributes were analyzed in terms of frequency distribution and mean ratings. Results of t-Tests were also analyzed. On account of limited space however, the detailed data on the analyses are not

presented here (see Finding 5 in the Summary of the Research Findings section).

Finally, the respondents' overall satisfaction with Maplewood Park was calculated (see Table 3).

Table 3. Overall satisfaction with Maplewood Park

X ₁ : Overall Satisfaction					
Mean:	Std. Dev:	Std. Error:	Variance:	Coef. Var:	Count:
4.095	.746	.123	.556	18.217	37
Minimum:	Maximum:	Range:	Sum:	Sum of Squ:	#Missing:
2.221	5.283	3.062	151.51	640.444	76

Correlations Between Pairs of Questions on Residential Environment Attributes

In order to analyze correlations between pairs of questions on the level of satisfaction with residential environment attributes, correlation coefficients were calculated. Table 4 displays these correlations between pairs of questions for those pairs which turned out to be significant (insignificant relationships were omitted).

Table 4. Correlations between pairs of questions on the level of satisfaction with residential environment attributes

Pairs of Residential Environment Attributes	Correlation Coefficient
Location of laundry facilities: Availability and number of laundry facilities	.676
Safety from crime : Safety from vandalism	.675
Overall appearance of apartment complex: Exterior appearance of apartment	.625
Ease of meeting neighbors: Sense of community	.603

Color of apartment's door:Materials of the outside of apartment	.533
View from apartment:Courtyards	.523
View from apartment:Visual privacy	.498
Visual privacy:Auditory privacy	.486
Relation to grocery shopping:Overall satisfaction with area in which the apartment is located	.481
Color of apartment's roof:Materials of the outside of apartment	.481
Location of parking areas:Availability of parking spaces	.475
Location of outdoor garbage facilities : Capacity of outdoor garbage facilities	.467
Outdoor recreational facilities (public lawn open spaces):Open space between the apartments (courtyards)	.467
Color of outside of apartment:Materials of the outside of apartment	.454
Overall appearance of apartment complex : Color of outside of the apartment	.453
Exterior appearance of apartment:Color of outside of apartment	.452
Neighbors:Sense of community	.449
Exterior appearance of apartment:Color of apartment's door	.430
Relation or distance to university : Public transportation	.415
Overall satisfaction with maintenance of outdoor areas:Condition of lawns and landscaping in front of apartment	.408

5. Discussion

Summary of the Research Findings

Finding 1:Residents' preference for and satisfaction with the residential environment attributes differed according to individuals' preferences, viewpoints, perceptions, interests

and adaptability.

Finding 2:The following were the main problems at Maplewood Park : rent, lack of freedom to personalize the outside of the apartment, size of porch and front yard, visual privacy, availability of parking spaces, view from the apartment, courtyards, and auditory privacy.

Finding 3:Residents were more concerned about more mundane aspects than about pure aesthetics. The following were important to them ; rent, safety, parking, laundry facility, lighting, distance to university, area in which the apartment is located, and privacy.

Finding 4:Most residents interviewed did not care about detailed attributes of their residential environment. It is this author's opinion that this was because most residents were students who spent most of their time in school rather than in their homes.

Finding 5:Results of t-Tests revealed the following. Male residents were more satisfied than female residents with the wooden materials of the outside of the apartment and with visual privacy. Female residents thought the following attributes more important than did male residents : programs for residents, safety, garbage facilities, lighting, public transportation, and visual privacy. Married residents were more satisfied than single residents with rent, neighbors, ease of meeting neighbors, sense of community, and programs for residents. Single residents, on the other hand, were more satisfied with freedom to personalize the outside of their apartments, maintenance of outdoor areas, parking areas and spaces, laundry facilities, capacity of outdoor garbage facilities, and condition of lawns and landscaping in front of the apartment. Married residents placed

more importance on freedom to personalize the outside of their apartments and on parking areas and spaces than did single residents, while single residents placed more importance on relation to grocery shopping than did married residents.

Finding 6: The results of calculations of correlation coefficients for analyzing correlations between pairs of questions on residential environment attributes regarding the level of satisfaction revealed that correlations existed (see Table 4 for significant relationships between pairs of questions).

Future Directions of Research

(1) Future researchers need to conduct research on both dwelling interiors and exterior spaces of housing environments in order to test, through the analysis of research results on dwelling interiors and outdoor space, how exterior space attributes are important in comparison with dwelling interiors.

(2) Individuals' differences in evaluating residential environment attributes, according to ethnic backgrounds, need to be researched.

(3) It is necessary to investigate how residents' perceptions of, accommodation with, and preference for their housing environment change with length of residence, and how residents' satisfaction with their housing environment and length of residence correlate.

(4) Research on residents' evaluation of housing environment attributes according to each subsection needs to be conducted.

6. Recommendations and Conclusions

Recommendations

Provide Personal Outdoor Space Adjacent to the Dwelling

To meet the residents' stated desire to use porch and front yard for personal purposes, porches should be enlarged to become suitable for personal activities such as resting, sunbathing, reading, and entertaining guests. Front yards should also become an area for personalization of the homes through displaying decorations and personal items, or growing flowers and vegetables. These concepts are illustrated in Figures 5 and 6, respectively.

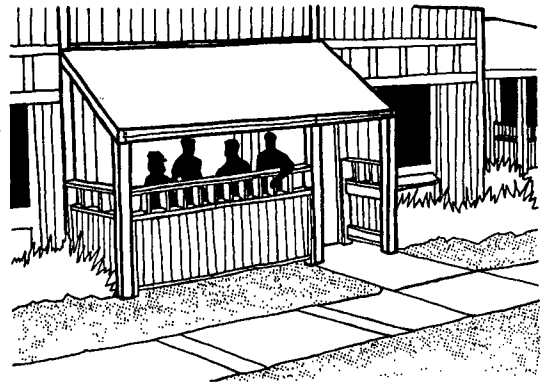


Figure 5. Porch should be enlarged to accommodate positive private outdoor activities.

Enhance Functionality of Outdoor Structures

To enhance the functionality of outdoor structures and to encourage their active usage, the porch and gazebo roofs should be completely covered (see Figures 7 and 8), and the pergolas should be provided with creepers for shade and protection (see Figure 9).



Figure 6. Front yards should be used for personalization of homes.



Figure 9. Creepers should be planted at the pergola to provide shade and protection.

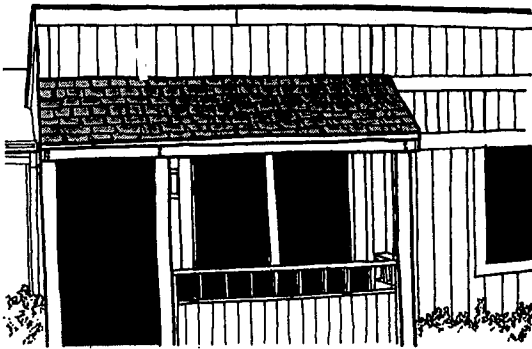


Figure 7. The porch roof should be completely covered.



Figure 8. The gazebo should receive a complete roof cover.

Provide Artifacts Supportive of Spatial Behavior

The benches at the side of the walk to the east of the apartment complex and at the public lawn open spaces were unappealing to residents because of their barren setting. The addition of trees, picnic tables and benches would encourage use for relaxation as well as more active spatial behavior and outdoor recreation activities (see Figures 10 and 11).



Figure 10. Additional benches and trees would provide nice places to sit.

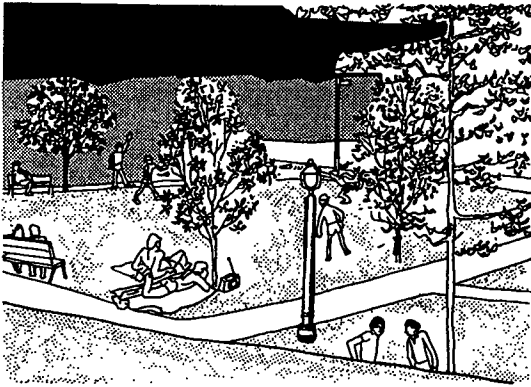


Figure 11. Supportive designed physical artifacts would encourage active spatial behavior.

Improve Residents' Interaction

Residents perceived the courtyards between cluster apartments as suitable for gatherings, but the inequitable distribution of picnic tables in these areas was mentioned as a drawback. Each courtyard should have a picnic table to give better opportunities for social interaction. For larger gatherings, residents can borrow additional picnic tables from neighboring courtyards (see Figure 12).

The sandboxes for children's play located in the public lawn open spaces of student-family housing units were a place for children and parents to gather and spend time together. Additional supportive physical artifacts such as benches, picnic tables, and trees in this area would provide even better opportunities for interaction among residents (see Figure 13), and a playground with structured play equipment for children's use would be recommended.

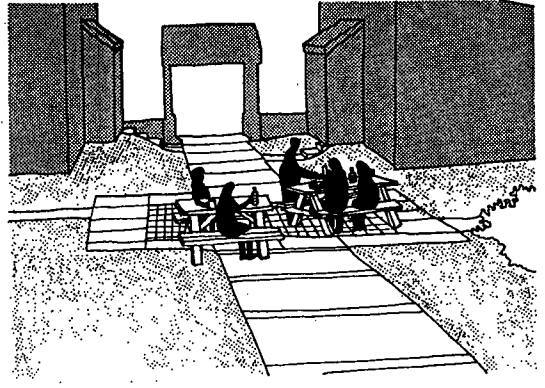


Figure 12. Picnic tables should be provided in each courtyard.

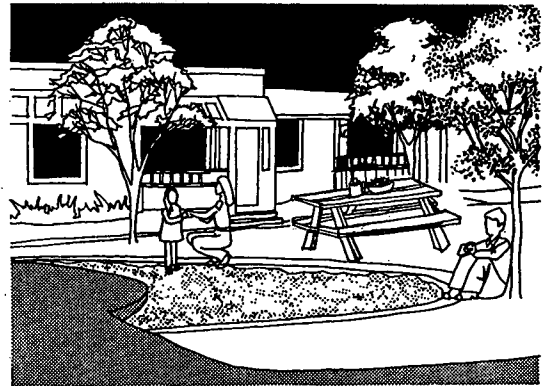


Figure 13. Supportive physical artifacts should be added near the sandboxes.

Increase Safety

Residents felt unsafe and wanted better lighting installed in the following places: the area from the very front of Maplewood Park to the Traffic Bureau on Maple Avenue, the bicycle path (see Figure 14), the area between community building and management office (see Figure 15), and the north parking lot. It is suggested that lighting in these areas be improved and a well-lit sidewalk leading from the very end of Maplewood Park on Mitchell Street to East Hill Plaza be built to increase residents' safety (see Figure 16).

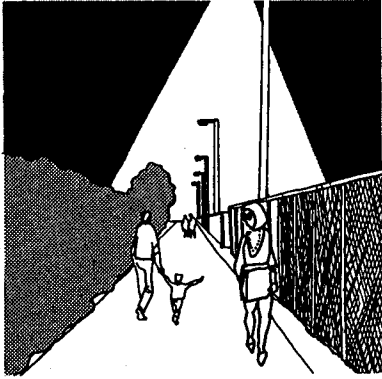


Figure 14. Adequate lighting for bicycle path should be provided.

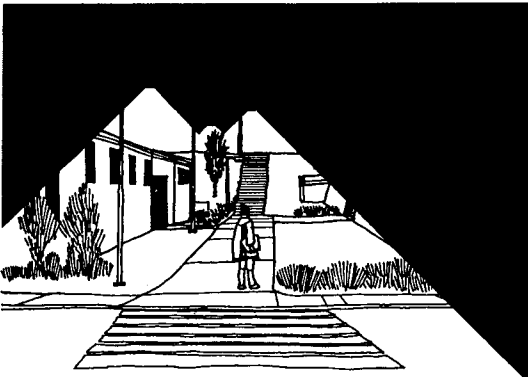


Figure 15. The area between community building and management office needs sufficient lighting.

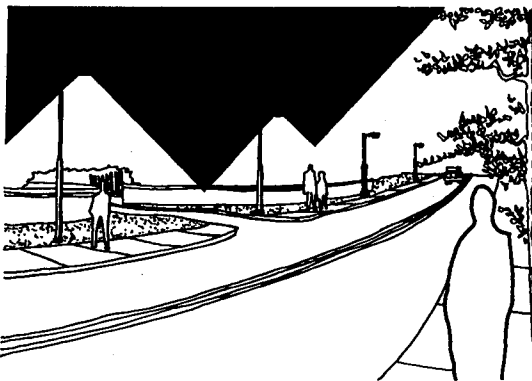


Figure 16. A well-lit sidewalk leading to East Hill Plaza is needed for residents' safety.

Provide Better Signs

The analysis showed that visitors had some trouble finding the apartment complex because there was no sign at the entrance to Maplewood Park. To alleviate visitors' confusion, it is recommended that signs saying Maplewood Park be installed at both entrances to the complex (see Figure 17). Furthermore, a "You are here" map could be installed to help visitors find their destination within the apartment complex (see Figure 18).

The visitor parking areas were not clearly marked. To help visitors find the parking areas set aside for their use, appropriate signs should be provided that guide visitors to visitor parking spaces at the north parking lot and the subsection D parking lot. Figures 19 and 20 illustrate this concept.

The apartment number signs as being deficient in size and lacking light-reflecting properties. It is recommended that larger, more easily readable signs with a reflecting coating be installed (see Figures 21 and 22).

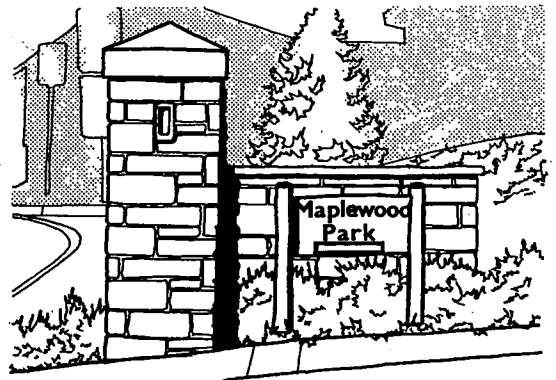


Figure 17. An identifying sign is needed at the entrance to complex.

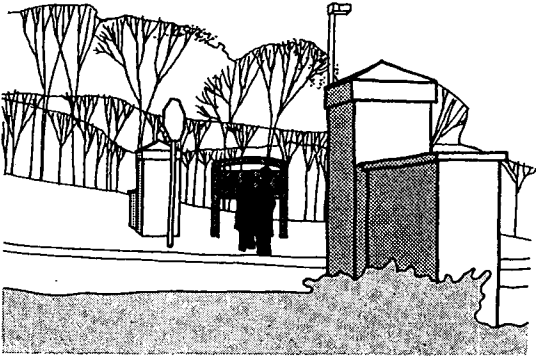


Figure 18. A "You are here" map would help visitors find their destination within the complex.

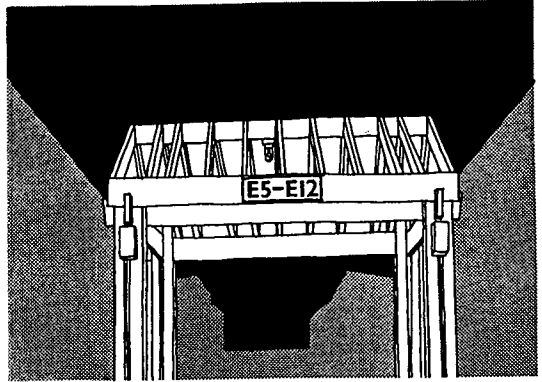


Figure 21. Signs on gazebos need to be of light-reflecting material.



Figure 19. A visitor parking sign is needed at the entrance to the north parking lot.

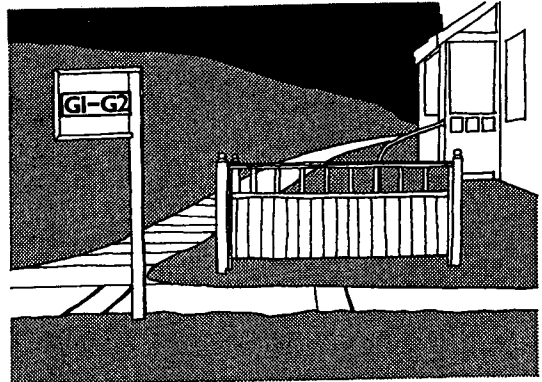


Figure 22. Apartment number signs facing outward the driveway should be of light-reflecting material.

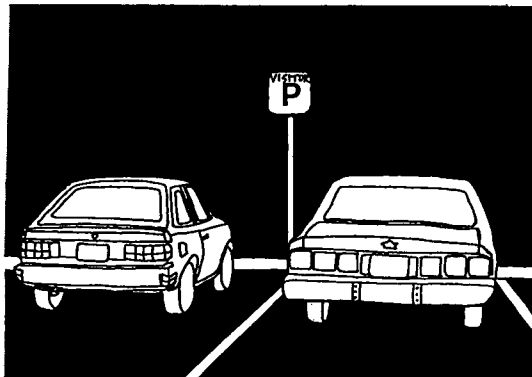


Figure 20. Parking spaces for visitors at the subsection D parking lot need to be clearly marked.

Improve Visual Privacy

The spaces behind the apartments pose a visual-privacy problem in that bedrooms are facing one another across the small open spaces. Planting evergreen trees in these spaces is recommended in order to increase visual privacy and to make the dead spaces meaningful (see Figure 23).

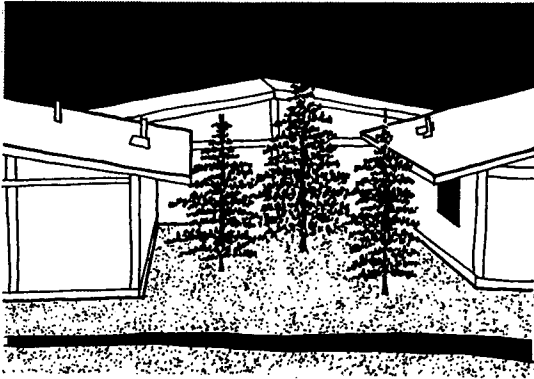


Figure 23. Evergreen trees in the rear spaces of the apartments would increase visual privacy.

Facilitate Use of Residential Facilities

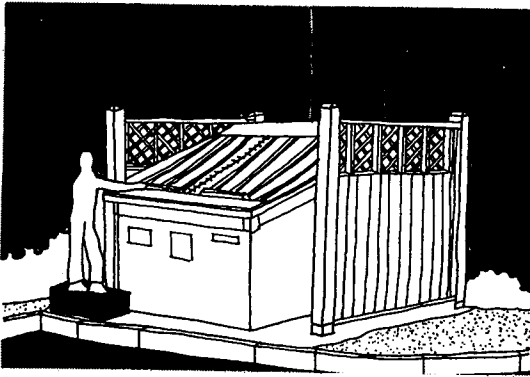


Figure 24. An elevated platform would make it easier for short people to use the garbage dumpsters.

There was a problem with the outdoor garbage dumpsters in that they were so high that short people had difficulty with

putting their garbage bags into the dumpsters. Elevated platforms next to the dumpsters would alleviate this problem and make it easier for short residents to dispose of their trash properly (see Figure 24).

Finally, management should review the policies concerning parking facilities and make residents more aware of the underused north and south lots in order to alleviate the difficult parking situation in the main lot.

Conclusions

The changes in order to meet users' needs and to improve the outdoor spatial quality of the apartment complex should be implemented as soon as feasible, and a year or so after the implementation another POE study should be done in order to find out whether these changes work well and which, if any, subsequent refinements would further improve living conditions in the Maplewood Park complex. This cyclic process of research and design would help improve the outdoor spatial quality of the housing environments.

An exact duplicate of Maplewood Park will not be developed, but the data obtained from this research study could be used in the planning of similar future housing projects in order to get a better understanding of the needs of residents.

Maplewood Park Resident's Questionnaire

First, please answer these questions:

1. After thinking about the outside of your house (the yard, the grounds), what are some things you especially *like* about the outside and what things *work* especially well?

2. Now, what are the things that you *do not like* about the yard and grounds around your home? What are the things that come to your mind that *do not work well* or that you *do not like*?

Please evaluate your current residential environment attributes by circling the level of satisfaction, and the level of importance you place on that attribute.

YOUR CURRENT RESIDENTIAL ENVIRONMENT ATTRIBUTES	SATISFACTION							IMPORTANCE						
	Very Unsatisfactory		Adequate			Very Satisfactory		Not Important		Neutral			Very Important	
1. Amount of money that you are paying (the rent)	1	2	3	4	5	6	7	1	2	3	4	5	6	7
2. Your neighbors (from your viewpoint: interests, compatibility, etc.)	1	2	3	4	5	6	7	1	2	3	4	5	6	7
3. Ease of meeting neighbors	1	2	3	4	5	6	7	1	2	3	4	5	6	7
4. Sense of community	1	2	3	4	5	6	7	1	2	3	4	5	6	7
5. Satisfaction with programs for residents (e.g., workshops, recreation, social activities)	1	2	3	4	5	6	7	1	2	3	4	5	6	7
6. Freedom to personalize the outside of your home (e.g., growing flowers or vegetables)	1	2	3	4	5	6	7	1	2	3	4	5	6	7
7. Safety from crime (robbery, burglary, rape, etc.)	1	2	3	4	5	6	7	1	2	3	4	5	6	7
8. Safety from vandalism (destruction of property or cars, etc.)	1	2	3	4	5	6	7	1	2	3	4	5	6	7
9. Overall satisfaction with maintenance of outdoor areas	1	2	3	4	5	6	7	1	2	3	4	5	6	7
10. Overall appearance of apartment complex	1	2	3	4	5	6	7	1	2	3	4	5	6	7
11. a) Location of parking areas	1	2	3	4	5	6	7	1	2	3	4	5	6	7
b) Availability of parking spaces	1	2	3	4	5	6	7	1	2	3	4	5	6	7
12. a) Location of laundry facilities	1	2	3	4	5	6	7	1	2	3	4	5	6	7
b) Availability and number of laundry facilities	1	2	3	4	5	6	7	1	2	3	4	5	6	7
13. a) Location of outdoor garbage facilities	1	2	3	4	5	6	7	1	2	3	4	5	6	7
b) Capacity of outdoor garbage facilities	1	2	3	4	5	6	7	1	2	3	4	5	6	7
14. Condition of outdoor lighting (e.g., amount of lighting at night)	1	2	3	4	5	6	7	1	2	3	4	5	6	7
15. Outdoor recreational facilities (public lawn open spaces)	1	2	3	4	5	6	7	1	2	3	4	5	6	7
16. Relation or distance to university	1	2	3	4	5	6	7	1	2	3	4	5	6	7
17. Relation to grocery shopping (e.g., East Hill Plaza, Collegetown)	1	2	3	4	5	6	7	1	2	3	4	5	6	7
18. Public transportation (e.g., city and campus bus lines)	1	2	3	4	5	6	7	1	2	3	4	5	6	7
19. Finding your way in the apartment complex (e.g., when friends visit for the first time)	1	2	3	4	5	6	7	1	2	3	4	5	6	7
20. Mail delivery system	1	2	3	4	5	6	7	1	2	3	4	5	6	7
21. Overall satisfaction with area in which your apartment is located (e.g., milieu, location)	1	2	3	4	5	6	7	1	2	3	4	5	6	7
22. Exterior appearance of apartment in which you live	1	2	3	4	5	6	7	1	2	3	4	5	6	7
23. Condition of lawns and landscaping (shrubs, trees) in front of apartment	1	2	3	4	5	6	7	1	2	3	4	5	6	7
24. Backyard of your apartment (small lawn spaces)	1	2	3	4	5	6	7	1	2	3	4	5	6	7
25. Size of porch and front yard	1	2	3	4	5	6	7	1	2	3	4	5	6	7

YOUR CURRENT RESIDENTIAL ENVIRONMENT ATTRIBUTES	SATISFACTION						IMPORTANCE							
	Very Unsatisfactory		Adequate		Very Satisfactory		Not Important		Neutral		Very Important			
26. a) Color of the outside of your apartment (gray)	1	2	3	4	5	6	7	1	2	3	4	5	6	7
b) Color of your apartment's door (dark green or dark red)	1	2	3	4	5	6	7	1	2	3	4	5	6	7
c) Color of your apartment's roof (black)	1	2	3	4	5	6	7	1	2	3	4	5	6	7
27. The materials of the outside of your apartment (wood)	1	2	3	4	5	6	7	1	2	3	4	5	6	7
28. View from your apartment	1	2	3	4	5	6	7	1	2	3	4	5	6	7
29. The wooden structures at the entrance to the apartments (gazebos)	1	2	3	4	5	6	7	1	2	3	4	5	6	7
30. Open space between the apartments (courtyards)	1	2	3	4	5	6	7	1	2	3	4	5	6	7
31. Visual privacy from others and neighboring apartments	1	2	3	4	5	6	7	1	2	3	4	5	6	7
32. Auditory privacy from others outside your apartment	1	2	3	4	5	6	7	1	2	3	4	5	6	7

Please answer these questions:

1. Your current address (please specify apartment number): _____
2. How long have you lived here? ____ years ____ months
3. Date of birth ____/____ (month/year)
4. Your sex: ____ Female ____ Male
5. Are you: ____ Asian ____ Black ____ Hispanic ____ White ____ Other
6. Are you currently a: ____ Undergraduate ____ Graduate ____ Student's Spouse ____ Other (specify) _____
7. Your marital status: ____ Single ____ Married ____ Other
8. Would you recommend Maplewood Park to your friends if they were looking for a place to live?
 - ____ I definitely would
 - ____ I probably would
 - ____ I don't know
 - ____ I probably would not
 - ____ I definitely would not

—Thank you very much for your information—

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