Functional relationships responding to wind regulation. This sketch eventually led to the axonometric on the following page.
DEVELOPEMENT

Form response to environmental conditions.
DEVELOPMENT

This scheme emphasizes the response to the various environmental conditions. It's form redirects winter winds. Active areas shield passive areas from harsh winds. In the summer, the passive areas receive fresh breezes for ventilation. Active areas are located to the north so odors leave the building. The circulation path is forced through spaces creating a conflict.
In this scheme, a circulation pattern is synthesized into the arrangement of spaces making circulation more efficient. A central skylight above the entry introduces you to most of the activities in the center. The main stair is placed in a key position. It is treated as a room. Activities are open to each other.
DESIGN DEVELOPMENT
The design went through many changes of shape, form, and materials before it reached its final appearance.

The project became very complex through the process with little or no ordering concepts. The different parts of the building responded to the natural elements such as wind or sun, and although the parts worked well, when they were put together, the project became chaotic and unordered.

This led me through a simplification process to find ordering systems that began to tie the building together.

The following pages show a few of the sketches that were drawn during the process.
I worked with various sections to try to maximize south exposure and get light to the north side of the gymnasium.
The project at one time had nine levels with a series of complex stair configurations to each level. The nine was reduced to three major levels and one half level.
I tried to develop an efficient system of vaults on load-bearing brick walls. I eventually abandoned the vaults because of the spans in the project.
At one point the greenhouse was very linear and had a shed roof. To unify the form of the project, the greenhouse was given a flat roof and was expanded to become an integral part of the senior center.
FORM AND MATERIALS

By mid-quarter juries I had steel bar joists resting on load bearing brick arched walls. The exterior had a metal skin and all doors were aluminum sliding glass doors. I switched from steel structural units to laminated wood because of the initial amount of energy it takes to produce the steel. The brick arched walls were not three dimensional as brick masonry walls should be so they too were removed.
These represent some of the details I worked with such as the running track, and the entrance to the north of the roller rink, and the garage doors that close off the mezzanine level from the outdoors.
ANGOLA PROPOSAL
Dan Woodfin and myself presented the following eight pages to a group of Angola Jaycees and the Angola area director of the Council On Aging.

The proposal suggested a piecemeal growth plan to get the community center under construction. The Council On Aging need a larger facility for their luncheon program and the Angola Jaycees expressed a great interest in providing a place for the youth of the community.

Both groups felt that one facility would best serve the community instead of the neighborhood centers we proposed. They are currently preparing a presentation to the City of Angola on phase one of the community center as they see it.
23 April 1979


This proposal is an attempt to bring together two different community groups with seemingly different goals, for the development of a community center(s). The two groups are the Council on Aging and the Angola Jaycees. The Council on Aging needs a facility to serve their various programs for the elderly of the community. The Angola Jaycees wish to contribute to the community by providing facilities for the youth which would enrich their growth and development as citizens of the community. These two groups with seemingly different goals, can achieve these goals by working together, through shared facilities to reach their goals.

Central Facilities and Neighborhood Facilities:
Which facilities are best centralized and which best handled on a neighborhood basis and why? This is the central question which we have considered in the development of this proposal. What is proposed basically is:

- A central recreational center
- Neighborhood youth centers
- A central senior citizen's center
- Neighborhood senior citizen's centers

Let us now examine each of these parts and the role that they play in the total picture.
The Central Recreational Facility:
1.) Recreational opportunities for all of the residents of Angola e.g. a roller rink, handball courts or whatever is wanted and needed.
2.) This is a drive-in facility with large parking areas to accommodate the type of traffic that will be generated.
3.) Ownership options:
   a. City owned and operated. Perhaps constructed using community development grants with operating costs defrayed entirely or in part by user fees.
   b. Membership owned and operated. The model for this would be the many membership owned swimming pool clubs scattered all over Indiana.
   c. Proprietary ownership and operation. The model for this approach would be the privately owned athletic clubs that have sprung up recently e.g. raquetball.
4.) This is not a neighborhood facility. For its support it will need to draw upon the entire community. The needs of the auto and the traffic and noise that will probably be generated should be considered in selecting a site.

Neighborhood Youth Centers:
1.) These should be close to home so that youth of all ages can safely and conveniently walk-in or bike-in.
2.) Activities in each neighborhood center can be geared to local interests. Conceivably, each center will develop along different lines of focus. This is probably necessary if the program is to have maximum appeal and attraction to diverse groups.
3.) Neighborhood centers should try to attract and involve leadership from the local neighborhoods served.

4.) This is based on the concept that neighborhoods can best provide for and care for their own.

5.) Leaders for these neighborhood centers can be drawn from a city-wide pool of interested and capable persons who will be working with neighborhood people in a neighborhood setting.

6.) The youth centers will provide safe, supportive environments where the youth can hang-out or pursue a hobby, interest or sport with friends, near home, informally supervised by youth leaders working with neighborhood kids, doing the things they enjoy the most.

7.) The type facilities required will depend upon the particular neighborhood. These interests may vary widely from neighborhood to neighborhood. In some it may be seasonal sports, in another it may be boxing or karate, while in another it may be crafts or for the older youth, auto mechanics.

8.) There are some types of facilities that may have a broad base of appeal to all groups and may be common to all neighborhood centers. One thing that comes to mind is the ever present coke, hamburger and jukebox and a place for small groups to sit and talk. Wherever these elements appear, so do our youth.

A Central Senior Citizen's Center:

1.) A center providing specialized services to senior citizens of the entire community. Facilities that could not be economically provided at the neighborhood scale.

2.) The administrative center for all local programs.

3.) This is not a neighborhood facility.
4.) People will come to this center by auto or bus.
5.) The center will be owned and operated by the Council on Aging.
6.) It would be desirable to locate this facility across the street from Fireman's Park in order to make the facilities as accessible as possible to residents of the three adjacent nursing homes.
7.) The site mentioned above has the added advantage of being owned by the city of Angola, reducing total facility outlay if the city would consent to this type of public use.

Neighborhood "Senior" Centers:
1.) These are small, neighborhood centers serving most of the needs of senior citizens, right in their own neighborhoods. For many it should be in walking distance.
2.) The neighborhood centers will work with and build upon existing informal social groups.
3.) Families and friends of the neighborhood seniors can be drawn upon for support in operating the center. They will have the incentive to help out if their family and friends are involved.
4.) This is another case where neighborhoods may be able to best look after the needs of their own. When a senior citizen has spent a lifetime in a particular neighborhood, the people in that neighborhood may best be able to understand and interpret the moods and needs of that individual.
5.) If the "senior" center is within walking distance of many of its participants it will enhance and support the independence of those individuals who can come and go from the center according to their own needs and desires.
6.) Where assistance is required in getting to and from the center, it
is much more likely that families and friends can attend to this need if the center is located just down the street.

7.) For those who can be motivated to walk to and from the center, the exercise is good for them physically in addition to their sense of independence.

8.) It also seems reasonable to assume that programs which are specifically geared to the interests of a particular neighborhood group could be more attractive than a program designed to appeal to the common interests of a much broader socio-economic and educational spectrum.

9.) A program formulated along these lines is also much less likely to be threatening to an elderly person that may choose to avoid situations where they might feel that noone knows them or their particular problems or needs, or situations where they might feel that they will be powerless to influences circumstances affecting them or circumstances where they might feel uncomfortable because they don't have they money to have their hair fixed, of nice clothes to wear, or where they might feel inferior to others who have a higher educational level than they do.

10.) Of course, no one wants senior citizens to feel this way. The programs are designed interest them, appeal to them and involve them. It is important then that these factors not be allowed to stand between these people and the programs designed to serve them.

11.) The "luncheon program" and the community coffeepot are probable the "basic" elements that will be found in all neighborhood centers.

Sites for Neighborhood Centers:
The exact location of sites should be based on a careful study where people are living which can most benefit from the services offered. One
that should be investigated is the possible use of existing city-owned neighborhood park sites. There are several things that suggest this:

1.) They may already function as neighborhood "centers".
2.) If that is the case, this would merely reinforce and support an existing function.
3.) The anticipated uses are complementary.
4.) This strategy would reduce the financial impact of such a program.

The Complementary Nature of Youth Centers and Senior Centers:

"There is a natural tendency for old people to gather together in clusters or communities. But when these elderly communities are too isolated or too large, they damage young and old alike. The young in other parts of town, have no chance of the benefit of older company, and the old people themselves are far too isolated! In communities which segregate old people we cause a "rift inside each individual life: as old people pass into old age communities their ties with their own past become unacknowledged, lost, and therefore broken. Their youth is no longer alive in their old age-the two become dissociated; their lives are cut in two". "In contrast to the situation today, consider how the aged were respected and needed in traditional cultures." This was almost universal in almost all know cultures. The potentials for better integrating the elderly into meaningful roles into our communities need fuller exploration. Consider some of the roles played by the elderly in the past.

Another family relationship of great significance for the aged has been the commonly observed intimate association between the very young and the very old. Frequently they have been left together at home while the able bodied have gone forth to earn the family living. These oldsters, in their wisdom and experience, have protected and instructed the little ones, while the children,
in turn, have acted as the 'eyes, ears, hands and feet' of their
feeble old friends. Care of the young has thus very generally
provided the aged with a useful occupation and a vivid interest
in life during the long dull days of senescence."

The exact meaning of this for the senior centers and youth centers is
ripe for exploration. There are several parallels to explore. Both
groups have "time on their hands". Youth often complain that their
parents are too busy to deal with their day to day interests. Youth is
also a time of great appetite for learning new things or skills. In our
elderly population we have a great repository of skills, experience and
wisdom waiting to be shared. When you think of it, there is every craft,
and every profession. There is every level of attainment from bank president
to laborer. For most of these people, the motivation to interact with the
youth will come from inside. There will be no charge or tuition for the
impacting of their lifetime of knowledge or experience. Only inward
satisfaction.

**Building In Phases:**
The initial phase of the project as we imagine it could probably be
started and finished this coming summer and with a relatively modest
investment of funds. What we imagine in the initial phase is the con-
struction of the "Senior House" and the "Youth Hut". Each would be
about 400 square feet and cost about $35/square foot, and thus cost
about $13,000. each to construct. We imagine a sharing of these facili-
ties in the beginning. The buildings would be separate from one another
but connected with a sheltered connector. During the day both facilities
could be used for the elderly programs. When school is out, the youth hut
would revert to its dedicated use. By approaching the project in this way,
Council On Aging could find an immediate home in new facilities. They
would then continue to pursue channels for obtaining financing for the Central Senior Citizens Center and for development of other neighborhood centers as needed. It is believed that satisfaction of the initial program needs, having made some physically demonstrable headway, and getting settled on the site will contribute substantially toward the larger goals. Success and progress breeds enthusiasm and support.

Building Costs:
The $35./square foot cost figure quoted earlier is taken from cost statistics compiled by the F.W. Dodge Corporation for the construction of community centers in the U.S. during 1978. Actually, Dodge quotes a range of $31/square foot for "low average" construction to $35/square foot for "average" construction to $40/square foot for "high average" construction. Actual costs will be affected by quite a few variables which we can discuss. One which must be mentioned is inflation. Obviously, 1978 prices are rarely "good" in 1979. They are just a guide. With good drawings, specifications, communication with local builders and good competitive bidding, you will get the best product for the best price.
CONCLUSION
CONCLUSION

The project is a very buildable one. Although it is far from perfection, some parts work very well. The red glazed tile and bright yellow panels give the exterior that alive quality that this type of project must have. The wood throughout the interior would make it a warm building inside. The type of materials used in the building would allow local contractors to easily construct the project. Some ideas are nice, but I need to analyze the concepts further to see if they really would work, example; thermosiphoning of the gymnasium.

Looking back on the thesis, I feel the project has failed in making a significant contribution to the field of architecture. The thesis has not failed in giving me a tremendous learning experience and giving me a beginning into an area of architecture that I know I must explore further. It correlates to a first year goal I made when I knew very little of architecture. That goal was to always create efficient architecture.

I envisioned this project at the start as a natural machine, a glistening mechanism synthesized with the ground. The final product is far from the initial vision. For better or worse I do not know. I still envision a natural machine architecture.
BIBLIOGRAPHY


Architectural Graphic Standards, John Wiley and Sons, Inc. 1970


Rationalized Design Process, C. Daniel Woodfin, Ball State University.


Survey and Analysis Land Use, Zoning and Housing for Angola Indiana, Craig A. Rice, State Planning Services Agency, Indianapolis, Indiana.


Wood, A Modern Structural Material, American Institute of Timber Construction.

APPENDICES
# Article XII - Schedule of Regulations

**SLC. 1200. Schedule Limiting Height, Bulk, Density and Area by Zoning District:**

<table>
<thead>
<tr>
<th>Zoning District</th>
<th>Minimum Zoning Lot Size per Unit</th>
<th>Maximum Height of Structures</th>
<th>Minimum Yard Setback</th>
<th>Minimum Floor Area per Unit (sq. ft.)</th>
<th>Maximum % of Lot Area Covered by All Buildings</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Area in square feet</td>
<td>Width in feet</td>
<td>Stories In Feet</td>
<td>Stories in Feet</td>
<td>Front</td>
</tr>
<tr>
<td>S Suburban</td>
<td>9,600 (a)</td>
<td>80(a)</td>
<td>2½</td>
<td>35</td>
<td>50(b)</td>
</tr>
<tr>
<td>A One-Family Res.</td>
<td>7,200 (a)</td>
<td>60(a)</td>
<td>2½</td>
<td>35</td>
<td>25(b)</td>
</tr>
<tr>
<td>B Two-Family Res.</td>
<td>3,600</td>
<td>30</td>
<td>2½</td>
<td>35</td>
<td>25(b)</td>
</tr>
<tr>
<td>RH Multiple-Family Res.</td>
<td>(d)</td>
<td>(d)</td>
<td>2</td>
<td>25</td>
<td>30(e)</td>
</tr>
<tr>
<td>LB Local Business</td>
<td>-</td>
<td>-</td>
<td>2</td>
<td>25</td>
<td>20(f)</td>
</tr>
<tr>
<td>GB General Business</td>
<td>-</td>
<td>-</td>
<td>3</td>
<td>30</td>
<td>30(f)</td>
</tr>
<tr>
<td>I-1 Light Industrial</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>40</td>
<td>40 (j)</td>
</tr>
<tr>
<td>I-2 Heavy Industrial</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>60</td>
<td>50 (j)</td>
</tr>
<tr>
<td>MII Multiple Res.</td>
<td>60</td>
<td>1</td>
<td>15</td>
<td>25(h)</td>
<td>10(c)</td>
</tr>
</tbody>
</table>
The Center can be entered on three levels, with the large community spaces placed on the upper slope (top photo and section), smaller rental spaces overlooking downward part of slope to south. Natural light comes in through north facing skylight (above) and south facing glass block stairwell (right), glass block in pool and gym (opposite) with conventional glazing used...
Main lobby of the Dixwell Community House is a three-level space looking into an interior court through a glass wall that zigzags from the roof to the ground.

PA. 4-72

Project: Dixwell Community House/Neighborhood Facilities Building
Architects: Herbert S. Newman collaborating with Edward E. Cherry
Site: Dixwell Ave., New Haven, Conn.

Program: Community oriented facilities for urban black neighborhood.

Major materials: Scored concrete block, anodized aluminum and tinted glass, exterior. Concrete block, paint, vinyl asbestos tile with carpeting in public corridors.

Structural system: Steel frame on concrete foundations.

Mechanical system: Forced air, oil fired heat.
Recreation Center

In the low-income black community of Poppleton in Baltimore, a building designed for recreational purposes has in itself become a giant piece of play equipment. In order to make effective use of the site, which is 6 ft lower than the sidewalks surrounding the building's corner location, the architects have designed a large ramp that sweeps down a half level from the sidewalk to the main entrance. Another ramp rises half a level to the second floor entrance. Both ramps extend through the building as major passageways and emerge at the other end of the linear structure. With this simple, yet dramatic gesture, the architects have turned the whole building into a series of inclines for running, roller skating, and bike riding. They have also recognized a previous condition of the once-vacant site, which a more conventional building might have ignored: the new system of ramps and corridors precisely follows the route of a footpath that had been used for years as a short-cut to the school at the other end of the bloc.

In addition to the building's use as a play element, it also functions as a learning device. For the whole structure is designed to impart knowledge about how a building goes together. All heating and air-conditioning ducts are brightly painted, exposed, round tubes with bold graphics to note which are for supply and which are for exhaust. The steel structure of columns and beams is exposed so there will be no mystery about what holds the building up, and how it was put together. An additional intent of the architects was to do this not with costly, customized materials, but to exploit and make understandable the nature of off-the-shelf catalog components, such as industrial wall panels and hardware, and a clip-on greenhouse skylight that runs the length of the major circulation path.

Like the Corning fire station, the surroundings here offered little of importance to respond to. The block on which the recreation center is located had been cleared, except for the old school. Undistinguished 19th-Century row houses face some parts of the block, but the setting is essentially one of treeless streets with large parcels of land left vacant by demolition. Because the center is to be the first phase of a planned community renewal effort, the community residents (who have been intensely involved in the project from the beginning) and the architects agreed that the new building should be one that would stand out as a fresh and exciting event to mark the beginning of new life in the neighborhood.

Not only is the center totally barrierfree, but it has also been designed with an unusual attitude toward vandalism. The architects have taken an approach that recognizes the need for natural light when people are in the building. As a result, large windows are installed at the ground level, but they can be closed with sliding steel "barn doors" that roll in front of them. All exterior glazing is high-strength acrylic, but as it turns out in retrospect, none of these precautions were really necessary. Because the community has been involved in this center from the moment of its inception, a building has resulted that the community feels is its own. And the best proof of this is that both during construction and since it has been occupied, not one item has been stolen.

Data
Project: Community Recreation Center and athletic fields, Baltimore, Md.
Architects: Designbank Incorporated; Nathan S. Leblang, project architect; James Pettit, graphic design; John S. Palmer III, project coordinator.
Program: recreational facility of 8000 sq ft for community activities, flexible space for games, meetings, learning; gymnasium not required as adjacent school has one; swimming pool to follow in next phase.
Site: except for existing adjacent school, a vacant inner-city square block partially surrounded by old row houses.
Structural system: masonry bearing walls, steel frame, metal deck; floors of steel with concrete fill; all walls are block; spread footing foundations.
Mechanical system: forced air heating and cooling; two zones, exposed sprial metal ducts.
Major materials: exposed block; interior surfaces covered with high-gloss polyurethane paint; exterior covered with spray-on polymer; rough stucco finish; corrugated aluminum siding; acrylic skylight and glazing.
(See Building materials, p. 100.)
Consultants: James Posey Associates, mechanical/electrical; Gerald A. Brown, P.E., structural; Datt, McCune, Walker Associates, site civil.
General contractor: Castle Construction Company, Inc.
Client: Department of Parks and Recreation, City of Baltimore; Model Cities Community, Council G; Bureau of Construction Management, City of Baltimore.

Printed on acid-free, 90% recycled paper; title page made with 100% recycled paper.
Though small compared with the large city centers, the one is for the community activities of adults as well as the sports of the youngsters, for a town of 18,000 population. The energies of the young are normally confined to the lower floor and the gymnasium, though the gym has balcony seats at the upper level. The community hall, with small kitchen attached, is designed to serve the varied purposes of adults, though the crafts room and the darkroom might also appeal to the grownups.

The site is wooded park property on the slope of a hill, adjoining open field and play areas. These are on a lower level at the rear, so there is a natural separation of activities. Play areas are paved with blacktop to be useful in any but the worst weather. The building is of red brick with limestone trim. Interior walls are exposed masonry for durability and economy, as the building was limited by the bond issue to $200,000.
A multitude of recreational equipment is contained in the enclosed parts of the building, and it is made feasible by users paying for damage. Over the bowling lanes (near the entrance) a mezzanine accommodates practice rooms, pinball machines and tables for billiards and paddle tennis (photo, left). A lounge, toward the rear of the building, has tables for study and snacks (photo below).
Meanwhile, the ASCORAL, too, was hard at work, and in particular Mlle Edna Maillard. An improved version of (A), completed on the 26th of December 1943, suggested

\[ \text{the line } g:i \text{ is divided into two equal parts} \]

\[ \text{or} \]

\[ \text{the result is two contiguous squares, each equal to the initial square}^{2}. \]

![Diagram of a square divided into two equal parts](image)

Fig. 7

Along the line \( g:i \) there appear certain significant measures, the relationships between which are infinitely rich in possibilities, but which did not yet seem to us to represent a system.

(1) Attached to the Musée de Cluny and author of an excellent book on regulating lines, *Du nombre d'or*, published by André Tournon et Cie.

(2) It will be seen at the end of this work that the absolute equality of the three squares evolved by this process is subject to certain reservations.

We may read as follows (Fig. 8):

- \( abcd \) = initial square;
- \( ef \) = median;
- the right angle to \( fg \) at \( f \) gives \( i \) on the line \( g-b \) produced;
- \( bdji \) = a rectangle, within which \( bi \) and \( dj \) stand in relationship \( \Phi^{3} \) to \( iq \) and \( qj \);
- the horizontal median of \( ghji = kl \);
- \( mn \) is in image of \( kl \) about \( ef \);
- \( kl \) divided in two by the vertical median \( op \) gives \( kopl \) and \( olpn \), the diagonal and the half of which stand in relationship \( \Phi \) to each other.

On \( gi \) we observe an augmenting progression of five elements:

- \( km \);
- \( gk = ki \);
- \( ka = mb = bi \);
- \( gb \).

![Diagram of a square with additional elements](image)

Fig. 8
the prevailing winds to reduce drafts and prevent the escape of warmed air. The heat retention of this type of structure makes it possible to maintain a temperature of 60°F inside when the exterior temperature is -50°F. Such structures may be heated by a small lamp supplemented by body heat.

The Pacific Coast tribes of British Columbia encountered a less extreme climate, although the need for heat conservation remained acute. To meet this demand these Indians adopted a form of communal living, as shown by the structure of the habitations of the Kwakiutl Indians. The homes of these tribes were joined together to form a compound. The aggregate of these shelters were built close together, creating a compact mass that provided an enclosed ambulatory between family units for the snowy winter months. This provided the dwellings with a central core that could be removed for ventilation. Further mutual benefit was achieved by the placing of fire pits within individual apartments along a center aisle, thus creating a concentrated heat source. In the Mackenzie Basin, shelters were constructed of bark and timber, covered by low-pitched roofs with long poles anchored to the covering to retain the snow as an insulating blanket.

The temperate area, offering a naturally favorable climate, made fewer thermal demands on its inhabitants, and there is a corresponding diversity and freedom in the structures of these peoples. Unlike the communal groupings of the Pacific Coast, the villages of the eastern woodsmen and plains dwellers were freely organized and spread out, with peripheral units merging into the surrounding landscape. The typical dwelling unit of these tribes was the wigwam, a conical structure of poles covered by skin, which effectively shed wind and rain and was easily heated from a central source. It could be readily transported, an essential to migration.

In contrast, the hot-arid zone made extreme demands on the constructors of tribal dwellings. Characterized by excessive heat and glaring sun, this area requires that the shelter be designed to reduce heat impacts and provide shade. The southwestern tribes, like those far north of them, often built communal structures for mutual protection—in this case from the heat. Structures such as the pueblo of San Juan were constructed of massive adobe roofs and walls, which have good insulative value and the capacity to delay heat impacts for long hours, thus reducing the daily heat peaks. They also used very small windows. By packing buildings together, the amount of exposed surface was reduced. Pueblo structures of this type usually extend on an east-west axis, thereby reducing morning and afternoon heat impacts on the two end walls in summer and receiving a maximum amount of south sun in the winter months when its heat is welcome.

The hot-humid area, on the other hand, presented two major problems to its inhabitants: the avoidance of excessive solar radiation and the evaporation of moisture by breezes. To cope with these problems, the southern tribes built their villages to allow free air movement, and the scattered individual units were mixed into the shade of surrounding flora. The Seminoles raised large gable roofs covered with grass to insulate against the sun and throw large areas of shadow over the dwellings, which had no walls. The steep angle and extensive overhang of these roofs protected against
Although the period is very short to have influenced house design it is possible to discern several features which can be attributed to cheap fuel. These are the large windows and the open planning which is made possible if heating is not confined to small areas; see photograph 2.6.

Effect on larger buildings
Outside the housing field development of heating has been more dramatic. Until well into the twentieth century many non-domestic buildings were heated by open fires in the same way as houses. An increasing number were provided with simple solid fuel fired radiator systems. With the era of cheap energy and, particularly, cheap electricity it began to be possible to provide not only heating for large buildings but also mechanical ventilation and cooling. Fully glazed and high rise buildings which could not have been made habitable in previous ages could be designed and equipped with installations capable of maintaining comfort throughout the year. Dependence upon the window for ventilation and daylight, which had governed the form of buildings throughout history, was no longer the case and completely new planning concepts became possible because of the use of environmental control installations. While the use of this type of equipment clearly has great value in many circumstances, for a period many badly conceived buildings were designed which depended upon wasteful use of plant and energy to make them habitable.

Deteriorating design
It is depressing, at a time when much highly sophisticated plant is being used for environmental control, to realise that through much of the industry buildings themselves were highly developed examples of application of heating, cooling, and performance even when designers could not influence or control the form of the building. Now that architects consciously design in thermal terms the quality of design has deteriorated and expensive plant and running costs are accepted as easy design solutions.

2.3 Significance of form, fabric and fenestration
2.31 Wallasey school
St George's School, Wallasey, Liverpool, was designed as a factor in the design of the function of the building. One of the classroom blocks in this school has large south-facing double glazed window, massive brick walls, and concrete roofs and floors with a very substantial amount of external thermal insulation, diagram 2.5. This building is designed so that the fabric is able to store heat and return it to the environment when needed. An ingenious arrangement of windows in the double skin wall enables ventilation control. The school was originally used without a heating installation. The thermal system of this building is often referred to as solar heating but in fact three factors contribute to the heating. First there is the solar gain through the large windows, second, heat gain from the occupants, and third, heat gain from the tungsten lighting system. The building has been occupied successfully for a number of years, and it is important to bear in mind the significance of the overall thermal performance of the output of heat from the occupants and from the lighting. Although children do not emit as much heat as adults in similar circumstances they tend to be rather more active, and they require a distinctly lower air temperature for comfort. In a school classroom of approximately 48 m² it is not unusual to find a population of 40 children. The area per pupil thus may be little more than 1.2 m². Typical office buildings may well have a density of occupation of one person to 10 m² and dwellings may well have a density of occupation of one person to 30-50 m².

2.32 Wider implications
It is clear, therefore, that the occupants at Wallasey contribute a substantial part of the winter heating load. In the summer this heat gain is clearly a disadvantage, but the hope at Wallasey is that the high rates of ventilation which can be achieved by the windows will maintain satisfactory conditions. Tungsten lighting in office buildings is often a problem because of its very high level of heat output and there can be little doubt that at Wallasey the lighting installation was also intended as a heating installation and on cold days is turned on before the pupils arrive in order to give adequate comfort. This is not, of itself, a major criticism. It may well be that if one installation can be used for both lighting and heating the saving in capital cost more than outweighs any increase of energy necessary for thermal comfort. On the other hand it is important that one bears in mind the significance of this aspect in maintaining a thermal balance. It is clear that Wallasey's should not be thought of purely as an exercise in solar heating. It is also clear from the density of occupation that there are few other building types which could be designed in this way even if they had appropriate sites. On the other hand, the fact that the school is able to maintain a level of thermal comfort which, if not of a very high order has, nevertheless, been entirely satisfactory to the occupants for a number of years, does give a dramatic demonstration of the importance of taking the form, fabric and fenestration of the building into account when considering the thermal performance.

One popular design that is cheap, easy to build and can cut down on the heating bill, is a one room window box solar heater. It is installed in a south facing window, set so that the window can be closed at night. A retracting 12 in. wooden septum extends into the room when the heater is in operation.

To make the best use of the thermosyphonic action there should be six inches above and below the collecting plate (sheet metal painted black and insulated on the back side), and twelve inches at the foot of the box where the air must turn the corner. When the sun is not out the cooler air settles in the bottom of the box and prevents a reverse flow.
Dear Handball Friend:

Every successful sport today owes its existence to some dramatic development that made it more attractive to the spectator or the player. Innovations and ideas that attract vast audiences to a little known sport help both the player and the non-player. Glass triggered the explosion of modern handball.

About 1945 I began experimenting with galleries for large crowds to inspire more exciting play. After considerable opposition to glass and many heartbreaking failures I built the first gallery-type court and it was appropriately named the "Bob Kendler Glass Court" by players who were grateful for the enormous boost it gave handball. Unfortunately, Clubs and Y's resisted glass to the bitter end. With one exception, Frank Hathaway, the far sighted owner of the great Los Angeles Athletic Club quickly recognized the multiple benefits of handball galleries and soon installed considerable glass. The results were almost unbelievable. Soon the die-hards began asking for plans. I drew them freely and enthusiastically, crossing the country many times to show, as well as tell,—how to build both glass and gallery.

I learned a great deal about remodeling as well as new building in my struggles with the varying structures and people. You will not find this remodeling experience in this report because there is no standard procedure for older buildings. All I have learned is yours for the asking. Ironically, 25 years of trial and error have not improved the original Glass Court. Some attempts have produced near failures by learned architects who ignore the players' point of view. As a player, a builder, and a club owner, I was well able to relate the players' needs to the owners' ability and the spectators' court. More than all else, I was able to prove the enormous profit that glass brings, not only in physical well-being, but in actual cash. I also proved that a glass court costs less than the conventional court, considering maintenance over the years.

I take considerable pride in the fact that I invented the Glass Court and am determined that it should add to and not detract from the purpose for which it was intended. The plans I have accumulated are available to you, provided your goal is the betterment of the sport. This is little to ask for $50,000 in plans, specifications and experience.

Sincerely,

Bob Kendler
President

4101 Dempster Street  Skokie, Illinois  Orchard 3-4000
SECTION A-A

PLAN

GLASS - SIDEWALLS HANDBALL COURT
SECTION B-B

SECTION C-C

ONE 110 WATT RECESSED
POWER GROOVE FLUOR.
LAMP. SEE DETAIL H

TWO 40 WATT RECESSED
FLUORESCENT LAMPS, THIS
AREA

LIGHTING PLAN

GLASS - SIDEWALLS HANDBALL COURT
TYPICAL CONSTRUCTION DETAILS

CORNER ANGLE
This corner angle, 2½" x 2½" x 3/16", used with Free Standing System only. It is attached to the corner studs with ½" bolt as shown, providing a sturdy, readily installed assembly.

CORNER ANGLE
Another view of corner angle installation used only in Free Standing System.

CEILING SPECIAL DETAILS
Shows detail of metal studs and ceiling joists.

SHOWS STUD SET in metal runner at floor level.

TELL TALE
Tell Tale shown above is used only for Squash Courts and installed as indicated.

FRAME

DOOR

INSTRUCTION MANUAL
With shipment of all components, complete detailed instructions for installation are included. This covers all of the three 62-P Systems including courts of special design.

D. B. FRAMPTON & COMPANY
LIGHTING REQUIREMENTS
LIGHTING CONSULTATION SERVICES
Frampton offers to its customers a full range of lighting information and guidance. We can recommend correct and tested lighting layouts for proper distribution of light output with minimum glare. Our fixtures have been installed for many courts in fluorescent, mercury and incandescent usages. A request to this office will bring you complete lighting recommendations for player-approved performance.

METAL STUDS

These members are cold rolled or galvanized. Size and gauge specified to suit method of erection. Attachment to floor and roof supports of building is accomplished through use of channels. Specifications on such attachments are detailed on page 11. Length of studs is precision trimmed for each job as required, eliminating costly cutting and fitting on the job site.

FASTENERS

The self-tapping screws used in fastening the studs to channels are 8 x 3/4”. Panels are attached to the steel studs with 10 x 13/4” Hardened Steel Tapping Screws. For direct to masonry installations, the mechanical fasteners proven most successful are toggle bolts or Dynabolt® of 3/4” barrel size or approved equal.
All fasteners are attached through face of panel and covered by a plug cut from the same 62-P material. Size is 1/4” and flush mounting is achieved with rigid set glue for permanent installation.

AIR SUPPLY AND CONTROL

We recommend no less than six changes of air per hour. This will generally result in sufficient fresh air and oxygen to provide for comfortable and safe playing conditions.
Air conditioning is the only certain way in which to protect the necessary changes or movement of air plus control of temperature and humidity required, depending on climatic conditions. We offer special data on this subject.

TELL-TALES

Singles and Doubles Squash Courts comply with U.S.S.R.A. specifications governing installation and markings required. See further details and specifications.

ADHESIVE

Type PL400, or equal, is a heavy-bodied construction adhesive that with recommended setting time forms a permanent bond to masonry, steel and/ or the 62-P wall panels. Adhesive plus mechanical fastening permits use of courts for play after floor is finished.

GLASS SPECTATOR WALLS (optional)

Modern court design now enables spectators to enjoy the same view of the court action as a basketball fan with a seat overlooking mid-court or from the 50 yd. line seats at a football game.
For tournament play, side walls and back wall can be all glass and accommodate a sizable audience. The U.S. Handball Association has been active in the development and encouragement of builders to include some glass walls whenever possible.
Frampton has conducted considerable research into manufacturing sources for the types of glass and structural details for these uses. If glass walls are contemplated in your design, please consult us for recommendations.

DOOR AND FRAME

This is a completely prehung package consisting of a full door jamb and sill of 2” SOLID F.A.S. RED OAK. Depth of jamb is 3½”. The total door thickness is ¾” consisting of a 1¼” SOLID BIRCH WOOD CORE faced on both sides with 7/16” panels of 62-P panel stock.
Viewing light opening of 5½” x 11” is optional . . . fish eye, standard Y.M.C.A. slot or ¾” plexiglass, or equal, flush mounted to court side of door.
Hinging of door to frame is achieved by three 230 Soss hinges featuring Brunner lockset flush mounted. Total size of frame is 2½” x 5½”. Door is packaged in separate container.
TYPICAL SCHEMATIC HANDBALL COURT/HORIZONTAL PANELS

TYPICAL SCHEMATIC SQUASH COURT/VERTICAL PANELS

NOTE: Horizontal or Vertical Panel Placement on any type court is optional.

SQUASH ISOMETRIC
"S" ARE FOR SINGLES COURT
"D" ARE FOR DOUBLES COURT
(2) FURRED SYSTEM

The use of Steel Furring Channels of various sizes has been developed by building materials manufacturers because of the obvious advantages offered by steel fabrication. These furring channels attached to masonry walls offer the most efficient method for a STRAIGHT and PLUMB surface for installing 62-P Panels. Furring channels are attached to masonry walls as required for structural design. This system eliminates the plumbing of each panel and insures a true playing surface where out of plumb walls occur.

(3) FREE STANDING SYSTEM

This system of self-supporting walls is the most advanced for court construction. By using steel studs as designed, the maximum benefits of the structural system is obvious. The only points of attachment required on the wall studs is in the floor and ceiling channels. Erection of the studs is facilitated by their full length and pre-cut precision dimension. We definitely recommend horizontal installation of panels with this system.

In multi-court construction, studs perform the additional function of being their own divider walls and this represents an additional saving in total cost per court. The properties of this divider wall technique have been carefully tested for structural integrity and the transmission of sound from one court to another is negligible (See Physical Properties).

CEILING CONSTRUCTION

In handball, the ceiling is a part of the court and the maximum trueness of bounce for this area of play can be achieved only by using the same type of material for ALL surfaces.

Construction is a simple attachment of 6" steel joists to the side walls and direct fastening 7/16" 62-P Panels to these joists with flat head, sheet metal screws.

Since there are a variety of ceiling considerations, such as lighting and ventilation, these panels can be pre-machined to fit architects or engineers design of lighting, heat, ventilation and air conditioning.

In squash play, the ceiling does not constitute a playable surface, but the cost of this ceiling is competitive with any good, durable surface currently used in the sport and its outstanding reflexion for lighting, and low maintenance should not be overlooked.
Physical Properties/62-P Panels

Above is a reduced facsimile of a letter dated December 16, 1971 from the United States Gypsum Company, manufacturers of our 62-P Panels, reporting test results conducted on these panels at their pertinent facilities. The body of this letter reads as follows (quote):

We have subjected our 1-3/16" FIBERESIN Panels, 62P, the type used by your Sports Courts Division for their squash and handball courts, to a series of tests determining their thermal insulation value, sound barrier characteristics and fire hazard classification. These tests were conducted at the United States Gypsum Research Center in Des Plaines, Ill., at the United States Gypsum Acoustical Research Facility, Round Lake, Ill., and at the Southwest Research Institute, San Antonio, Texas. Results were as follows:

Insulating properties: k value: 1.03
                    BTU/in/hr/ft²/°F
C value: 864
                    BTU/hr/ft²/°F

Sound transmission loss when installed on both sides of 3½" 20-ga. steel studs, 16" o.c.: 45 STC.

Fire hazard classification, (determined in ratio to asbestos-cement, rated 0, and red oak flooring rated 100) flame spread: 90; fuel contributed: 105; smoke developed: 290.

Direct reproductions of actual letter are available upon request, if so desired.

THE THREE BASIC WALL SYSTEMS

Here are the three basic methods of 62-P Sports Courts System wall installations that cover the whole range of structural design.

Placement of panels on all walls is governed by the consideration of maximum structural rigidity to insure the best possible play. Wall panels illustrated are installed vertically with butt joints providing minimal jointing in wall surfaces. Panels can also be placed horizontally with staggered vertical joints if conditions structurally, or other factors, dictate such installation.

(1) DIRECT TO MASONRY SYSTEM

This system employs 62-P Panels which are pre-bored, and accurately machined for butt joint fit. They are applied direct to the masonry walls with mechanical fasteners carefully selected for maximum hold through holes that are predrilled at six points on each 4' x 8' panel.

The panel attachment is supplemented by liberal use of PL-400 Construction Adhesive or equal, forming a permanent bond between the panel and the wall. All mechanical attaching points are counter-bored and covered with a ½" plug of 62-P material. The rigidity of these panels is such that minor gaps and voids in the masonry walls are easily bridged and an unequalled accuracy in court dimension can be achieved.

FLOORING CONSTRUCTION OPTIONS

Wood floors should be Northern Hard Maple. We recommend use of DOWELOC® PLANK FLOOR of Northern (Canadian) Hard Maple, as illustrated. However, wood strip or parquet flooring of acceptable resilient construction are optional, as well as synthetics such as 3M, “Tat-tan” or equal. Consult us for optional specifications and comparative cost factors. See page 9 for DOWELOC® installation detail and page 11 for floor finish requirements.
DESIGN CONSULTATION AND SERVICE

D. B. Frampton & Company offer a unique service in the design, construction and installation of Sports Court systems. Architects and engineers are naturally in need of information concerning these courts, requiring care in the structure, location, details, mechanical, lighting and electrical systems.

As a nationally known specialist in the design of courts, which is our only business, D. B. Frampton & Company offers a service of consultation for architects and engineers anywhere in the United States, without obligation. Our knowledge and background over a period of 20 years is available to you from the early concept of the project and preliminary cost estimating through to the final painting and striping.

We urge you to recognize the unusual complexity of courts during the initial phases of the project and to call D. B. Frampton & Company for assistance and guidance. Your early consultation with our firm will help to create a project design schedule to eliminate delays and extra cost.

62-P PANELS

62-P Panels, manufactured by the Fibresin Division of U.S. Gypsum Company, are extremely dense, multilayered, thoroughly fused, fibrous resin panels. They are chemically and physically bonded with dense melamine resins, resulting in a panel that is warp resistant, dimensionally stable and highly resistant to abrasion, scratching, staining and moisture penetration. Panel material used in 1-3/16" thickness on walls and 7/16" thickness on doors and ceilings of courts. Panels are white with surface textured for uniform light reflection.

Typical Schematic Layout of Complete Sports Court Facility
SUGGESTED ARCHITECTURAL SPECIFICATIONS

SCOPE OF WORK
Furnish all materials for the handball, squash and all types of sports courts as designed by Sports Courts Division, D. B. Frampton & Company, using 62-P panel system includes 62-P wall panels, steel studs, solid core door with 62-P panels on both sides, ceiling panels where required, steel joists, all structural adhesive, self tapping screws, 62-P plugs for concealing screws, Tell Tales for squash courts, and flooring as specified.

PANELS
All wall panels shall be 1-3/16" thickness in accordance with standards established by Sports Courts Division, D. B. Frampton & Company. All panels to be square edged and milled edges to be accurate 90° angles for fitting together, leaving a very fine line at joints. All panels to be pre-bored and counterbored for attachment to either steel studs, or masonry walls, with self-tapping sheet metal screws or mechanical fasteners.

STUDS
Steel studs shall conform to specifications for metal studs and shall be galvanized. Size of steel studs shall be as specified on standard drawings of Sports Court Division, D. B. Frampton & Company or as designed for a non-standard application. On a front wall, all studs to be placed five studs to a 4' panel; one at each edge of panel and three others 12" on center, forming a double stud at each 4' panel edge. All other wall studs to be placed four studs to a 4' panel; one at each edge of panel and two others 16" on center, forming a double stud at each 4' panel edge, thus allowing the joint stud to be adjusted to insure a flush joint. All studs shall be fastened to bottom and top runner channel of same manufacture as studs, using No. 8 x 1/4" sheet metal screws on both sides of studs. (Note: Precise spacing of studs to exact 4'-0" modules is extremely important for either vertical or horizontal installation.

FASTENING DEVICES
All panels shall be attached to steel studs or masonry wall with no less than 6 sheet metal screws or toggle bolts, DynaBolts® or other acceptable mechanical fasteners through pre-drilled holes in the 62-P panels. Each stud must have a ribbon of structural adhesive the full length of the panel. On masonry, the same holes shall be pre-drilled, with adhesive placed behind each hole in a pad for plumbing of each panel.

CEILING
Ceiling, where required, shall consist of 6", 16 gauge joists, running across the court from top of plate to top of plate, and attached to top plate with sheet metal screws. Joists are placed 16" on center and at end of an 8' panel, one extra joist is placed so that there are two butting joists at every 8' for leveling the joint of the panels. Panels are applied to joists using structural adhesive as before specified, and sheet metal screws. Hole is reamed for surface attachment to the steel joist. Screws are three to each 4' width of panel at each joist.

DOOR & FRAME
Door of all handball and squash courts shall be a complete unit, consisting of solid oak frame and sill with three concealed #220 square hinges, pre-drilled and attached to frame and door. Door consists of solid 1/4" birch core, with a laminate of 3/8"-62-P panel on each face, total of 2 1/4" in thickness. Vision panel shall be Plexiglass or equal, fish eye or peep slot, flush with the inside of court. Brunner lockset is to be used on court side and to be flush. Door is pre-hung but unit must be set plumb and rigidly attached in rough opening. When location permits, double-stud framing shall be used for door openings.

FLOORING
DOWELLOC is to be of Northern Hard Maple, 1/4" thick by 12" wide with proper length for type of court being constructed. Flooring options are: wood strip, parquet flooring of acceptable resilient construction as well as synthetics such as 3M, "Tartan" or equal.

FLOOR FINISHES
All wood floor surfaces shall be sanded smooth and level.

FOR HANDBALL
Court floors shall be finished with one coat of penetrating sealer then apply striping paint, finish with two coats of oil modified urethane finish. Optional use of 2 lbs. #100 aluminum oxide additive per gallon to last coat of finish is permitted.

FOR SQUASH
Floor of court shall be finished with a white semi-gloss (eggshell) enamel. Product of any quality paint manufacturer acceptable, and number of coats (primers, second coats and finishing coats) should be applied in accordance with the particular paint manufacturer's instructions.

RECOMMENDED PROCEDURE:
Apply a primer coat, two intermediate coats and a finish coat. Color on tell-tales shall match the white finish on floor. Finishing coat of floor paint shall receive an additive of ±100 white aluminum oxide grit, mixing one quarter pound per gallon of paint.

COURT LINES
All lines (and tell-tale bevel on Squash courts only) shall be painted with a "Non-Bleeding" Bulletin Red. For exact location of such lines in either squash or handball courts, please refer to official rules as published by U.S.S.R.A. and U.S.H.A.

TELL-TALE
Top edge shall be 17" above and parallel to the floor, and shall be as close as possible to the front wall and still permit vibration to make a ringing sound when struck by the ball. In no case may the tell-tale extend more than 1½" from the front wall. Sports Courts tell-tales are so constructed that 4 panels will span a single squash court and 6 panels will span a double squash court.

FINAL PLUGGING AND CLEAN UP
Go over the entire court to see that all joints are flush and at this time plug all holes with 62-P panel material, using a white glue for securing the plugs in place. At this time wipe all walls down, using either a mild detergent or an odorless mineral spirit. Clean off all surplus glue or adhesive.

MAINTENANCE
Since 62-P panels are pre-finished, surface must be maintained by cleaning with mild soap or detergent to remove ball marks or similar markings. Stubborn marks may require use of odorless mineral spirits. In no instance shall abrasive cleaners or pads be employed.

D. B. FRAMPTON & COMPANY
PRE-GAME BASICS

Types of courts

Racquetball can be played on one-, three-, or four-wall courts. The most popular is the enclosed, four-wall court with a ceiling. However, at the junior and senior high school levels one- and three-wall courts are more common than the more expensive four-wall style.

This book deals mainly with four-wall play, but most of the principles you will learn here can also be used on one- and three-walls.

The walls of racquetball courts may be made from various materials, including cement, and prefabricated fiber-resin panels. Four-wall courts may be constructed of glass, for better viewing by spectators. Official indoor courts have wooden floors, although schools often select cement, as a less expensive alternative.

Basic rules

Racquetball can be played with two (singles), three (cutthroat), or four players (doubles). Singles and doubles are...
A PATTERN LANGUAGE

Volume 1, The Timeless Way of Building, and Volume 2, A Pattern Language, are two halves of a single work. This book provides a language, for building and planning; the other book provides the theory and instructions for the use of the language. This book describes the detailed patterns for towns and neighborhoods, houses, gardens, and rooms. The other book explains the discipline which makes it possible to use these patterns to create a building or a town. This book is the sourcebook of the timeless way; the other is its practice and its origin.

The two books have evolved very much in parallel. They have been growing over the last eight years, as we have worked on the one hand to understand the nature of the building process, and on the other hand to construct an actual, possible pattern language. We have been forced by practical considerations, to publish these two books under separate covers; but in fact, they form an indivisible whole. It is possible to read them separately. But to gain the insight which we have tried to communicate in them, it is essential that you read them both.

The Timeless Way of Building describes the fundamental nature of the task of making towns and buildings.
A PATTERN LANGUAGE

It is shown there, that towns and buildings will not be able to become alive, unless they are made by all the people in society, and unless these people share a common pattern language, within which to make these buildings, and unless this common pattern language is alive itself.

In this book, we present one possible pattern language, of the kind called for in The Timeless Way. This language is extremely practical. It is a language that we have distilled from our own building and planning efforts over the last eight years. You can use it to work with your neighbors, to improve your town and neighborhood. You can use it to design a house for yourself, with your family; or to work with other people to design an office or a workshop or a public building like a school. And you can use it to guide you in the actual process of construction.

The elements of this language are entities called patterns. Each pattern describes a problem which occurs over and over again in our environment, and then describes the core of the solution to that problem, in such a way that you can use this solution a million times over, without ever doing it the same way twice.

For convenience and clarity, each pattern has the same format. First, there is a picture, which shows an archetypal example of that pattern. Second, after the picture, each pattern has an introductory paragraph, which sets the context for the pattern, by explaining how it helps to complete certain larger patterns. Then there are three diamonds to mark the beginning of the problem. After the diamonds there is a headline, in bold type. This headline gives the essence of the problem in one or two sentences. After the headline comes the body of the problem. This is the longest section. It describes the empirical background of the pattern, the evidence for its validity, the range of different ways the pattern can be manifested in a building, and so on. Then, again in bold type, like the headline, is the solution—the heart of the pattern—which describes the field of physical and social relationships which are required to solve the stated problem, in the stated context. This solution is always stated in the form of an instruction—so that you know exactly what you need to do, to build the pattern. Then, after the solution, there is a diagram, which shows the solution in the form of a diagram, with labels to indicate its main components.

After the diagram, another three diamonds, to show that the main body of the pattern is finished. And finally, after the diamonds there is a paragraph which ties the pattern to all those smaller patterns in the language, which are needed to complete this pattern, to embellish it, to fill it out.

There are two essential purposes behind this format. First, to present each pattern connected to other patterns, so that you grasp the collection of all 253 patterns as a whole, as a language, within which you can create an infinite variety of combinations. Second, to present the problem and solution of each pattern in such a way that you can judge it for yourself, and modify it, without losing the essence that is central to it.

Let us next understand the nature of the connection between patterns.
A PATTERN LANGUAGE

The patterns are ordered, beginning with the very largest, for regions and towns, then working down through neighborhoods, clusters of buildings, buildings, rooms and alcoves, ending finally with details of construction.

This order, which is presented as a straight linear sequence, is essential to the way the language works. It is presented, and explained more fully, in the next section. What is most important about this sequence, is that it is based on the connections between the patterns. Each pattern is connected to certain “larger” patterns which come above it in the language; and to certain “smaller” patterns which come below it in the language. The pattern helps to complete those larger patterns which are “above” it, and is itself completed by those smaller patterns which are “below” it.

Thus, for example, you will find that the pattern accessible green (69), is connected first to certain larger patterns: subculture boundary (13), identifiable neighborhood (14), work community (41), and quiet backs (59). These appear on its first page. And it is also connected to certain smaller patterns: positive outdoor space (107), tree places (171), and garden wall (173). These appear on its last page.

What this means, is that identifiable neighborhood, subculture boundary, work community, and quiet backs are incomplete, unless they contain an accessible green; and that an accessible green is itself incomplete, unless it contains positive outdoor space, tree places, and a garden wall.

And what it means in practical terms is that, if you want to lay out a green according to this pattern, you must not only follow the instructions which describe the pattern itself, but must also try to embed the green within an identifiable neighborhood or in some subculture boundary, and in a way that helps to form quiet backs; and then you must work to complete the green by building in some positive outdoor space, tree places, and a garden wall.

In short, no pattern is an isolated entity. Each pattern can exist in the world, only to the extent that is supported by other patterns: the larger patterns in which it is embedded, the patterns of the same size that surround it, and the smaller patterns which are embedded in it.

This is a fundamental view of the world. It says that when you build a thing you cannot merely build that thing in isolation, but must also repair the world around it, and within it, so that the larger world at that one place becomes more coherent, and more whole; and the thing which you make takes its place in the web of nature, as you make it.

Now we explain the nature of the relation between problems and solutions, within the individual patterns.

Each solution is stated in such a way that it gives the essential field of relationships needed to solve the problem, but in a very general and abstract way—so that you can solve the problem for yourself, in your own way, by adapting it to your preferences, and the local conditions at the place where you are making it.

For this reason, we have tried to write each solution in a way which imposes nothing on you. It contains only those essentials which cannot be avoided if you really
want to solve the problem. In this sense, we have tried, in each solution, to capture the invariant property common to all places which succeed in solving the problem.

But of course, we have not always succeeded. The solutions we have given to these problems vary in significance. Some are more true, more profound, more certain, than others. To show this clearly we have marked every pattern, in the text itself, with two asterisks, or one asterisk, or no asterisks.

In the patterns marked with two asterisks, we believe that we have succeeded in stating a true invariant: in short, that the solution we have stated summarizes a property common to all possible ways of solving the stated problem. In these two-asterisk cases we believe, in short, that it is not possible to solve the stated problem properly, without shaping the environment in one way or another according to the pattern that we have given—and that, in these cases, the pattern describes a deep and inescapable property of a well-formed environment.

In the patterns marked with one asterisk, we believe that we have made some progress towards identifying such an invariant: but that with careful work it will certainly be possible to improve on the solution. In these cases, we believe it would be wise for you to treat the pattern with a certain amount of disrespect—and that you seek out variants of the solution which we have given, since there are almost certainly possible ranges of solutions which are not covered by what we have written.

Finally, in the patterns without an asterisk, we are certain that we have not succeeded in defining a true invariant—that, on the contrary, there are certainly ways of solving the problem different from the one which we have given. In these cases we have still stated a solution, in order to be concrete—to provide the reader with at least one way of solving the problem—but the task of finding the true invariant, the true property which lies at the heart of all possible solutions to this problem, remains undone.

We hope, of course, that many of the people who read, and use this language, will try to improve these patterns—will put their energy to work, in this task of finding more true, more profound invariants—and we hope that gradually these more true patterns, which are slowly discovered, as time goes on, will enter a common language, which all of us can share.

You see then that the patterns are very much alive and evolving. In fact, if you like, each pattern may be looked upon as a hypothesis like one of the hypotheses of science. In this sense, each pattern represents our current best guess as to what arrangement of the physical environment will work to solve the problem presented. The empirical questions center on the problem—does it occur and is it felt in the way we have described it?—and the solution—does the arrangement we propose in fact resolve the problem? And the asterisks represent our degree of faith in these hypotheses. But of course, no matter what the asterisks say, the patterns are still hypotheses, all 253 of them—and are therefore all tentative, all free to evolve under the impact of new experience and observation.

Let us finally explain the status of this language, why
we have called it "A Pattern Language" with the emphasis on the word "A," and how we imagine this pattern language might be related to the countless thousands of other languages we hope that people will make for themselves, in the future.

_The Timeless Way of Building_ says that every society which is alive and whole, will have its own unique and distinct pattern language; and further, that every individual in such a society will have a unique language, shared in part, but which as a totality is unique to the mind of the person who has it. In this sense, in a healthy society there will be as many pattern languages as there are people—even though these languages are shared and similar.

The question then arises: What exactly is the status of this published language? In what frame of mind, and with what intention, are we publishing this language here? The fact that it is published as a book means that many thousands of people can use it. Is it not true that there is a danger that people might come to rely on this one printed language, instead of developing their own languages, in their own minds?

The fact is, that we have written this book as a first step in the society-wide process by which people will gradually become conscious of their own pattern languages, and work to improve them. We believe, and have explained in _The Timeless Way of Building_, that the languages which people have today are so brutal, and so fragmented, that most people no longer have any language to speak of at all—and what they do have is not based on human, or natural considerations.

We have spent years trying to formulate this language, in the hope that when a person uses it, he will be so impressed by its power, and so joyful in its use, that he will understand again, what it means to have a living language of this kind. If we only succeed in that, it is possible that each person may once again embark on the construction and development of his own language—perhaps taking the language printed in this book, as a point of departure.

And yet, we do believe, of course, that this language which is printed here is something more than a manual, or a teacher, or a version of a possible pattern language. Many of the patterns here are archetypal—so deep, so deeply rooted in the nature of things, that it seems likely that they will be a part of human nature, and human action, as much in five hundred years, as they are today. We doubt very much whether anyone could construct a valid pattern language, in his own mind, which did not include the pattern _arcades_ (119) for example, or the pattern _alcoves_ (179).

In this sense, we have also tried to penetrate, as deep as we are able, into the nature of things in the environment: and hope that a great part of this language, which we print here, will be a core of any sensible human pattern language, which any person constructs for himself, in his own mind. In this sense, at least a part of the language we have presented here, is the archetypal core of all possible pattern languages, which can make people feel alive and human.
STATE OF INDIANA
COMMISSION ON THE AGING AND AGED
215 NORTH SENATE AVENUE
INDIANAPOLIS, INDIANA 46202

APPLICATION FOR PROJECT GRANT
Under Title V of the Older Americans Act

(FOR STATE AGENCY USE)

1. GENERAL INFORMATION

<table>
<thead>
<tr>
<th>Name of proposed project</th>
<th>Address at which proposed project will be conducted (Street, City, County)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name, address, and phone number of applicant organization</td>
<td>Name of project director, supervisor, or coordinator</td>
</tr>
<tr>
<td>Type of proposed project:</td>
<td></td>
</tr>
<tr>
<td>Project year for which funds are herein requested</td>
<td>Beginning____ and ending_____</td>
</tr>
</tbody>
</table>

II. COMPUTATION OF FUNDS REQUESTED

<table>
<thead>
<tr>
<th>A. ESTIMATED TOTAL COST (Totals from Sec. III).</th>
<th>Project year for which funds are requested</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>B. LESS APPLICANT'S PROPOSED CONTRIBUTION (Totals from Sec. IV).</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Project year for which funds are requested</td>
</tr>
<tr>
<td></td>
<td>Project year for which funds are requested</td>
</tr>
<tr>
<td></td>
<td>Project year for which funds are requested</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>C. AMOUNT REQUESTED (Subtract B from A)</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Project year for which funds are requested</td>
</tr>
<tr>
<td></td>
<td>Project year for which funds are requested</td>
</tr>
</tbody>
</table>

TERMS AND CONDITIONS: It is understood and agreed by the undersigned that: 1) funds granted as a result of this request are to be expended for the purposes set forth herein and in accordance with all applicable laws, regulations, policies, and procedures of this State and the Administration on Aging of the U.S. Department of Health, Education, and Welfare; 2) any proposed changes in the proposal as approved will be submitted in writing by the applicant and upon notification of approval by the State agency shall be deemed incorporated into and become a part of this agreement; 3) the attached Assurance of Compliance (Form AOA-441) with the Department of Health, Education, and Welfare Regulation issued pursuant to Title VI of the Civil Rights Act of 1964 applies to this proposal as approved; and 4) funds awarded by the State Agency may be terminated at any time for violations of any terms and requirements of this agreement.

Name and title of individual authorized to commit applicant organization to this agreement. (Signature) (Date)

NOTE: Submit original and two copies.
### III Calculation of Total Budget

<table>
<thead>
<tr>
<th>A. Cost Classification</th>
<th>Title V Funding</th>
<th>Grantee Share</th>
<th>Total Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Preliminary Expense</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Land, Structures, right of way</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Architectural engineering basic fees</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Other Architectural engineering basic fees</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Project Inspection fees</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. Construction and Project Improvement</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. Equipment</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8. Total (Lines 1 through 7)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9. Title V funds requested</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10. Grantee Share</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

8. Provide a detailed expenditure of Title V funding (i.e. type of equipment), itemized improvement plans (ramp, roof repair, etc...)
### IV. ESTIMATED CONTRIBUTION OF GRANTEE

<table>
<thead>
<tr>
<th>SOURCE</th>
<th>AMOUNT</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>A. CASH</strong></td>
<td>$</td>
</tr>
<tr>
<td><strong>B. IN-KIND RESOURCES</strong></td>
<td>SUB-TOTAL</td>
</tr>
<tr>
<td></td>
<td>SUB-TOTAL</td>
</tr>
<tr>
<td></td>
<td>TOTAL</td>
</tr>
<tr>
<td><strong>C. REMARKS</strong></td>
<td></td>
</tr>
</tbody>
</table>
V. Facility Information

1. Title or other interest in the site is or will be vested in:
   Applicant, Agency or Organization operating the facility; 
   Other (specify)

2. Indicate whether the applicant/operator has:
   Fee simple title, Leasehold interest; Other 
   specify

3. If applicant/operator has leasehold interest, give the following information:
   a. Length of lease or estate interest, and number of years to run
   b. Is lease renewable? yes, no
   c. Current appraised value of land
   d. Annual rental rate

4. Attach an opinion from acceptable title counsel describing the interest applicant/operator has in the site and certifying that the estate or interest is legal and valid.

5. Target dates for:
   Bid Advertisement; Contract Award
   Construction/Renov. Completion; Occupancy

6. Description of facility:
   Drawings -- Attach any drawings which will assist in describing the project
   Specifications -- Attach copies of completed specifications with estimated costs

7.* Applicant assures that the facility for which funds are requested is adaptable for serving as a multi-purpose senior center
   yes no

8.* Applicant assures that a multi-purpose senior center program will be operated in the facility.
   yes no

9.* Applicant (acquiring a facility) assures that the facility purchased with Title V funding shall be used as a multi-purpose senior center for no less than ten years and that the owner of the facility shall be a public or non-profit private agency or organization for the same time period.
   yes no

10.* Applicant (renovating/altering) assures that the facility renovated or altered with Title V funds shall be used as a multi-purpose senior center for no less than five years.
    yes no

*If answer is no, please provide explanation.
1. Applicant assures it will comply with regulations, policies, guidelines and requirements of Title V.
   --- yes --- no

2. Applicant possess legal authority to apply for the grant; that the governing body authorizes the filing of the application and has authorized the preparer of this application to act in connection with this application to provide such additional information as may be required.
   --- yes --- no

3. Applicant assures that it will submit the application to the appropriate clearinghouse for an A-95 Review and that review comments shall be presented to the State Agency.
   --- yes --- no

4. This agency shall comply with Title VI of the Civil Rights Act of 1964 (P.L. 88-352).
   --- yes --- no

5. Applicant shall comply with Title VI of the Civil Rights Act of 1964 (42 USC 2000d). Provide signed HEW 441 Form
   --- yes --- no

6. Applicant shall comply with requirements of the provisions of the Uniform Relocation Assistance and Real Property Acquisitions Act of 1970 (P.L. 91-646).
   --- yes --- no

7. Applicant shall comply with the provisions of the Hatch Act.
   --- yes --- no

8. Applicant shall comply with the minimum wage and maximum hours provisions of the Federal Fair Labor Standards Act.
   --- yes --- no

9. Applicant assures that safeguards shall be established to prohibit employees from using their positions for private gain for themselves or others.
   --- yes --- no

10. Applicant assures that the agency or the comptroller through any authorized representative shall have access to and the right to examine all records, books, papers, or documents related to the grant
    --- yes --- no

11. Applicant shall comply with all requirements imposed by the Federal grant or agency concerning special requirements of law, program requirements approved in accordance with Office of Management and Budget Circular No. A-102.
    --- yes --- no
12. Applicant assures that all facilities acquired under this program will conform with the Architectural Barriers Act of 1968.

   ___ yes    ___ no

13. Applicant assures that requirements set forth in Section 504 of the Rehabilitation Act of 1973 and HEW regulations and guidelines are met regarding nondiscrimination on basis of handicap.

   ___ yes    ___ no

14. Applicant assures that HEW requirements for federally assisted construction contracts regarding labor standards & equal employment opportunity shall be adhered to, if applicable.

   ___ yes    ___ no

15. Applicant assures that it will submit in triplicate to the ICOA for approval, the contract negotiated for construction work after bids are let (alteration/renovation) along with assurance that the approved contractor has an affirmative action plan. (Applies only if contract is over $2,500)

   ___ yes    ___ no

16. Applicant assures that the facility will not be used for sectarian instruction or religious worship.

   ___ yes    ___ no

17. Applicant understands that the entire project must be completed by September 30, 1978.

   ___ yes    ___ no

Note: If the answer no, is provided to any of the above questions, please explain.
SECTION A: ESTIMATED PROGRAM OUTPUT

1. Unduplicated number of older persons to be served directly. ___

2. Unduplicated number of low income persons to be served. ___

3. Area to be served by Senior Center:
   - Neighborhood(s) only
   - City wide
   - County wide
   - Area wide (multi-county)

   Estimated number of older persons
   (65 and over) located in planning area: 3250

   15% served by nursing homes

   30% actually will use

   Est. 1980

   Angola 2 mi planning area 862

   Direct service activities:

<table>
<thead>
<tr>
<th>Service/Activity</th>
<th>Check those Applicable</th>
</tr>
</thead>
<tbody>
<tr>
<td>Homemaker/home health aide</td>
<td></td>
</tr>
<tr>
<td>Home maintenance/companionship services</td>
<td></td>
</tr>
<tr>
<td>Foster home placement</td>
<td></td>
</tr>
<tr>
<td>Meals/Nutrition programs</td>
<td></td>
</tr>
<tr>
<td>Information and referral</td>
<td></td>
</tr>
<tr>
<td>Employment referral</td>
<td></td>
</tr>
<tr>
<td>Counseling</td>
<td></td>
</tr>
<tr>
<td>Transportation</td>
<td></td>
</tr>
<tr>
<td>Adult education</td>
<td></td>
</tr>
<tr>
<td>Community senior volunteer opportunities</td>
<td></td>
</tr>
<tr>
<td>Recreation and leisure activities</td>
<td></td>
</tr>
<tr>
<td>Other (specify)</td>
<td></td>
</tr>
</tbody>
</table>

SECTION B:
This application must be accompanied by a descriptive narrative -- and written comments from other public and private non-profit agencies to use the facility to deliver services to older persons or contribute resources to expand the program of the center. (Narratives should be limited to four pages.)
EVALUATING EXISTING FACILITIES FOR RENOVATION

The availability of funds will, to some extent, determine the planning committee's approach to using an existing facility for a Senior Center. When there is little money for capital improvements and future operating sources are somewhat uncertain, a short-term lease with minimal renovations may be the best answer. But when future funds are more definite and appropriations for capital improvements are available from private or government (federal, state, county, or municipal) sponsors, then the best approach may be a long-term lease or building ownership with more extensive alterations.

Once the financial situation is realistically appraised, then the process of building selection can proceed. The planning committee can appoint a site selection task force to carry out the selection. This group will need the advice of a gerontological planning consultant or a design architect and may want the assistance of a local real estate advisor as well.

The group responsible for site selection will be concerned to find the best possible building in their community for use as a Senior Center. What makes one building more suitable for a Center than another? How can the committee select and evaluate in a rational way? What are the important criteria that should govern their deliberations?

One way to approach these problems is to organize the factors to be considered into convenient categories or parts. The first will concern the location of the building in the community—its visibility, identity, character and accessibility. These considerations (related to community use) can be called location needs.

The second category will deal with how the building functions as a setting for the Senior Center's program, its activities and services. These considerations (which affect the success and efficiency of staff operation) may be grouped under the heading of program needs.

The third will be concerned with more universal needs—the need for a building that is both safe and comfortable to be in, as well as one that is convenient and easy to get around in. These considerations (which relate more to the special needs of the elderly participants) will be called human needs.

With this framework in mind, we can now examine in more detail each item that should be considered in choosing an existing building for conversion to a Senior Center.

LOCATION NEEDS

Without question, one of the most important points to be satisfied is accessibility. The building must be in a location that can be reached without difficulty by the community's older members who will be using the Center.

The planning committee must have already clarified the Center's service role. Is it to be a neighborhood Center, used almost entirely by those who live in the immediate vicinity? Or is it to be a downtown Center, accessible to older people with diverse backgrounds and interests, who will come from a much larger area? Is it to be a rural Center, with members coming from several sparsely settled townships or even counties? Regardless of its particular role, the building should be a location that is convenient to public or private transportation or that is within walking distance for the participants. How far participants must travel to reach the Center is a most important consideration.
The location of the building will have much to do with the kind of participants it attracts, especially if it is a neighborhood facility. The characteristics of the elderly population who live nearby will largely determine whether the Center will be serving middle- or lower-income groups, younger or older age-groups, or those from a majority or minority ethnic background. (Of course, the Center's program also has a bearing on the mix of participants.)

The building should have a prominent location where it can have high visibility. It is an important public building that serves as a focal point in the community for the concerns and interests of older people; its appearance and location should reflect that. An attractive building in a good location can be a source of pride both for older persons and the community at large. These qualities are fundamental for a downtown Senior Center, but they are also important considerations for neighborhood and rural Centers.

The physical safety of the participants is a critical factor in the location of the building--especially in urban settings where higher crime rates are a particular threat to the elderly. The surrounding area should be as safe as possible so that the Center's participants need not fear robbery, mugging or other forms of criminal harassment.

Proximity to other services, agencies or facilities can be a deciding factor in choosing an existing building for a Senior Center. If it is adjacent to a public park, for example, the Center may be able to share in the use of the land for active or passive recreation. A nearby housing complex for the elderly may provide many new participants. The Center's location in relation to shopping, medical facilities and other public services, furthermore, could make these facilities convenient to participants. For an information and referral program to be most effective, the referred services should be near at hand.

Few things will lower the cost of a building that is offered for sale more than a downward trend in the value of surrounding properties. Such a building may be bought at a bargain price, but its future value after improvements will be jeopardized. Seeking advice from the local planning commission or from a real estate consultant familiar with the area may prevent such a questionable investment.

Just as important as the general neighborhood are the uses of the surrounding buildings. Will the people who use buildings in the immediate vicinity in any way conflict with the Senior Center participants?

To summarize, the important factors to consider in selecting an existing building for a Senior Center should include: Convenient access to the largest number of participants, proximity to the particular groups the Center will serve, a prominent location with good visibility in the community, a setting where participants will feel safe from bodily harm, the convenience of nearby public services (especially transportation) and a stable neighborhood where surrounding uses are compatible with a Senior Center.

PROGRAM NEEDS

A Senior Center needs large open spaces for a variety of group activities. The auditorium or multipurpose room is commonly the largest such place in the Center. For the program to be most effective, this room should be free of columns and partitions. Because such space is fundamental to the program, most Senior Centers are located in buildings that contain at least one large open space with no obstructions.
Ideally, a Center will have rooms of many different sizes, each best suited to accommodate a particular group of activities. Rooms for dining, meetings, and crafts as well as social lounges must be quite large—often from 400 to 2000 square feet in area. Only conference rooms, offices, storage, toilets and similar service rooms will be smaller, and even they will range from 100 to 300 square feet.

In choosing an existing building for a Senior Center, it is usually preferable to select one whose interior is relatively free of columns. Where columns are present, the wider the spacing between them the better the area may be subdivided. The first thing to look for is a clear space large enough to be reserved for an auditorium or multipurpose room. If this can be achieved, then other large rooms can often be accommodated, and the occasional column that winds up in a lounge or craft room will not interfere with the room's proper use.

Second in importance after the existence or spacing of interior structural columns is the presence of dividing partitions, which can be either an asset or a liability. When they enclose rooms that can be put to good use in the Center program, dividing partitions will be a definite advantage. If the partitions are in the right place it will make for a well-planned Center and will reduce the cost of renovation significantly.

When the building interior is subdivided in such a way that it cannot accommodate the program, however, and many partitions have to be demolished and built again at a different location, the cost of renovations will rise rapidly. Though the partitions may be removed without endangering the support of the floor or roof above, they often enclose electrical wiring and mechanical piping that must be relocated. When partitions are moved, the floor, wall and ceiling finishes must often be replaced and the building's lighting, heating and ventilation systems changed. All of these changes increase the cost, and unless the partitions are already located where they are needed, it is more economical if they do not exist at all.

A third factor to consider carefully is the possible presence of bearing partitions that actually support the floor or roof above. It is sometimes difficult to determine if an existing partition is structural without having it examined by an architect, engineer or building contractor. The offhand opinion of a real estate broker should be verified by professional consultation. While bearing partitions can be removed and replaced by a column and beam to open up the interior, the cost of such changes may be prohibitively high.

If the building appears to satisfy these structural and functional requirements, it should be examined next from the standpoint of the potential character and quality of its interior environment. Here we should try to imagine how the space will appear when all of the renovations have been completed. The architect and gerontological planning consultant have the training and experience to visualize such physical changes, and they should be consulted to ensure satisfactory results. Without actually preparing design drawings, they can judge how the renovations will affect the final appearance.

The quantity, size, type and location of windows will be most important because it will determine which rooms receive natural light and whether the interiors can be bright and cheerful. Existing materials and finishes for walls, floors and ceilings as well as door, window and baseboard trim often must be retained for economy, and all of these features will affect the final appearance and quality of the interior.
All municipalities and political subdivisions are subject to building codes and have inspectors to interpret those codes. No building should ever be purchased or leased for a Senior Center until the sponsor has determined with reasonable certainty that whatever improvements are required to bring the structure into compliance with the code are both feasible and affordable.

The principal things to be examined will be the ability of the floors, walls, and columns and beams to withstand fire for a sufficient period of time to permit safe evacuation of the building. The width, length and location of corridors and stairs, the presence of combustion detection systems and alarms, and in some cases the inclusion of fire suppression devices such as sprinkler systems or wet and dry standpipes, all affect the relative safety and value of a building.

Though a one-story building is usually the safest, other things being equal, additional floors can be perfectly safe and may be necessary for a larger Center. But steps can be physically taxing and even hazardous for some older people, and an elevator is highly desirable in a multilevel building to assure the best use of the facility.

Few older buildings have a floor level that is even with the grade outside, so it is often necessary to climb steps to reach the first floor. When there are only a few steps they can often be supplemented with a ramp, making the ground floor accessible to the wheelchair user. The building with an entrance at grade and with an elevator for two or more stories is by far the best choice for a Senior Center.

Older people are generally more sensitive to changes in temperature than younger people are, and they can be quite uncomfortable in rooms that are too hot or too cold. It is advisable to examine the various mechanical and electrical systems carefully, especially the heating and lighting, to see how satisfactory they will be for the Center.

If the existing building is in "move-in" condition and few partition changes are required, the present heating system may be adequate. If extensive alterations are necessary for program needs, they will affect the heating distribution systems and controls so that new ducts and grilles, or piping and radiators, plus wiring and thermostats, may have to be added.

Since Senior Center programs tend to bring fairly large numbers of people together in a confined space, proper ventilation must be provided. Opening windows can deliver natural ventilation, but in cold weather those near the windows may be chilled while those on the other side of the room may still be too warm. When a building is put to a new use as a Senior Center, the chances are that its cooling and ventilation needs may be radically affected. Air conditioning or ventilation fans together with ductwork grilles and control devices may be needed to achieve good comfort levels, and they can add up to a sizeable expenditure.

Older buildings were often designed with less electrical power than is common today. Often when a building is remodeled, new lighting fixtures and wiring are required, along with new convenience and power outlets, and--in many cases--a complete new electrical service is needed. We also have become accustomed to higher lighting levels, and for both safety and comfort the building should meet the standards of the Illuminating Engineering Society (IES).
If the program is to work to its full potential, the Center must have an essentially open interior and not be a series of closed rooms opening off a corridor. Vision panels and low partitions, or in some cases no partitions, can help open up the interior and encourage participation in the program.

Some rooms, of course, must be closed to provide complete privacy; offices for administration or counseling, meeting rooms for classes and rest rooms are typical examples.

Total floor area is another factor to be carefully weighed. It is obvious that the space must be large enough to contain the principal rooms, but frequently too little attention is paid to the need for supporting spaces. After it has been in operation for a few years, almost every Senior Center finds that it doesn't have enough space for storage and for private offices. On the other hand, rooms too large for the scheduled activities or a total floor area far exceeding the actual need can be wasteful and costly to maintain and operate.

If there are sufficient grounds around the building, three important functions--parking, service and recreation--can be effectively accommodated. While many participants arrive by public transit or walk from the neighborhood, a significant number will come by car, and on-site parking can be relatively inexpensive and highly desirable. Since parking requires about 300 square feet per car, a fairly large open area is needed.

Building services such as the delivery of food, fuel and supplies and the removal of refuse make a service area away from the principal entrance a preferable arrangement. A service drive, delivery area and outdoor storage can require a considerable amount of ground space.

While an outside area that can be developed for active and passive recreation is not essential, it is a feature that should be considered in acquiring a building for a Senior Center. Such an area can be used year-round in some parts of the country and during three to six months in most other areas.

In order to satisfy the diverse needs of the Senior Center program, an existing building must have a number of important functional characteristics if it is to be a suitable setting when renovations are completed. There are still other criteria to be evaluated, however, and they can be grouped under the general heading of human needs.

HUMAN NEEDS

The distinction that sets these factors apart from the program needs described above is that they deal more with the needs of the participants as individuals than with the activities in which they engage.

The paramount consideration is human safety, most importantly, safety from fire and panic. Any building that brings large numbers of people together in a group situation must provide adequate protection in case of an emergency. Here is another case in which a building may have been perfectly safe for its original use, but may require many changes for its new use as a Senior Center.
In recent years, great strides have been made in developing standards that permit public buildings to be used by the handicapped. While at the present time few Senior Centers meet the standards, it is desirable that they should. Compliance with these standards is a requirement in using Title V (Older Americans Act) funds. The cost of altering an existing building to meet such standards can be high and can consume a large part of the total budget.

Acoustical control, isolation or privacy are desirable and often necessary in a Senior Center, both for the comfort of the individual and success of the activity program. Where existing partitions separate rooms that require privacy, it is important to check that they do not transmit sound. Sound is easily transmitted through the cracks around closed doors, over the tops of some partitions, through the space above the ceilings or even through grilles into ductwork in the ceiling and then to another room.

The use of sound-absorbent materials such as carpeting, acoustical ceiling tiles and window draperies will reduce noise levels, but will not provide sound isolation. If these materials already exist in a building many dollars can be saved on remodeling costs.

This brief review has highlighted some of the principal concerns in evaluating an existing building for conversion to a Senior Center. Later chapters cover some of the same ground, but in much greater depth; they should be read and understood before selecting a building or undertaking a remodeling program. The best evaluation can be made by an architect or consultant who has read the material and understands the special needs of his client and available resources.

BUILDING EVALUATION CHECK LIST FOR RENOVATION

Safety

1. As a Senior Center, would the property meet the requirements of the building and zoning codes?
2. What additional work is necessary to bring the property up to code requirements?
3. What is the construction? Is it fireproof, fire protected, ordinary or frame?
4. Are there protective systems, such as sprinklers, fire detection or fire alarms?
5. Is the property one or more stories above grade level?

Size

1. What is the gross area of the building lot?
2. What is the gross floor area?
3. What is the net floor area available for actual program use?
4. Are existing floor plans available?
5. How many useful rooms are there and what is the area of each?
Adaptability

1. Does the property contain open floor space, or is it subdivided into corridors and rooms?
2. If subdivided, can the rooms be used as they are in the Senior Center?
3. Are there clear floor spaces (free of columns and bearing partitions) that are large enough for the principal center rooms?
4. Is outdoor space available for parking and recreation?
5. Is the space on one floor or on several floors?
6. Is the character and condition of the building appropriate for a Senior Center?
7. Is it feasible to make the alterations that would be required?

Availability

1. Does the property meet the site selection criteria?
2. Is there an elevator if the space is on more than one floor?

Building Services and Utilities

1. How many bathrooms are there, and how many toilet fixtures are there in each room?
2. If the property has a commercial kitchen, what equipment is included?
3. Is the heating system satisfactory and in good condition?
4. Is there central air conditioning in good condition?
5. Will these systems need to be altered if the space is subdivided for the Senior Center?
6. Are there adequate electrical and power outlets?
7. Can existing lighting be used for the Senior Center?
8. Does the illumination level meet IES standards?
9. Is the electrical service sufficient for Senior Center use?
10. Is adequate storage available in cabinets, closets and store rooms?

Cost

1. What is the cost of renovations?
2. Will the cost of renovations be included in the lease?
3. What is the cost for architectural and engineering services?
4. What is the annual cost of rent per gross square foot?
5. What is the cost of purchase per gross square foot?

Potential Facilities

1. Church halls or churches
2. Schools
3. Supermarkets
4. Commercial office space
5. Catering halls
6. Funeral parlors
7. Libraries
8. Restaurants
9. College buildings
10. Warehouses