ACTIVITY NODES
HOUSING FUNCTIONS - GENERAL
SPACE REQUIREMENTS
INTRODUCTION

"Providing housing for students is more than just throwing up a barrack block and calling it something or other hall. Traditional dormitories are out of step with the concepts of higher education that make the four years (or more) of college a cultural and social experience as well as for gathering information on academic topics... Housing should offer students a delight in living so that they can behave as individuals at one moment and indulge their gregariousness the next."

Over the years the trend in student housing has been towards an apartment type living where a small group or "family" of students share living and cooking facilities. Ball State students seem to prefer this type of living arrangement with one exception, they do not care to prepare their own meals. This is according to a survey of Ball State students done by David Krue in 1977. Most students, however, "resent and reject any activity that requires them to congregate in large groups at specified times... (they) disdain huge dining halls where meals are served promptly at 9:00, 12:00 and 5:00... What students want is a flexible food plan that offers them a variety of options from which to choose. And they want to be able to eat at any hour of the day or night."

This housing project should be designed to accommodate approximately 250 students (male and female) of varying ages, backgrounds and cultures. It would be desirable that access to the individual living units could be gained without the use of elevators. In addition there should be several levels at which the residents can interact with one another so that their living experience is a more enjoyable one. The 1st level of interaction would be the individual bedrooms themselves. In the study-bedrooms friends are
able to interact on a more formal, private level. The second level of interaction might be amongst the members of a homogeneous or "family" type group. This would be an identifiable grouping of a couple of private rooms around a common living area where in close ties between members of the living unit could be made. What I am talking about here is basically apartment type living. In an effort not to alienate one group from another, a third level of interaction would be amongst the individual groups forming the complex so that a sense of community is formed.

SEE SPATIAL SUMMARY FOR SPACE SQUARE FOOTAGE

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1 Preiser, Wolfgang F.E., Behavioral Design Criteria In Student Housing, Environmental Systems Lab, College of Architecture, Virginia Polytech Institute, 1969.

2 Ibid.
FUNCTIONAL COMPONENTS

Function/Title: Study-bedroom

Description: The student's bedroom is the smallest and most basic living element of the housing facility. It is the core environment of the student for he/she spends many of his or hers waking hours here (undergraduate girls, 8; boys, 6)*. It is here that the student sleeps, studies, socializes, and dresses. Most of a student's belongings are also stored here.

Users: Student resident and friends

Activities: Sleeping, studying, socializing, dressing, and a place to relax and be by yourself.

Component spaces: Sleeping area
Study area
Wardrobe

Sociophysical performance: Room configuration should allow for a variety of furniture arrangements. Natural light, view to outside, possible outside deck area, sufficient sound separation for privacy, task lighting for studying.

Furniture and equipment:
1 or 2 beds depending on occupancy
1 or 2 desks depending on occupancy
shelving
mirror
wardrobe
soft chair

* From Times Savers Standards For Building Types.
FUNCTIONAL COMPONENTS

Function/Title: Living room

Description: Each apartment will be provided with an integral living room where members of the living unit can interact with one another and entertain guests. A variety of activities such as conversation, game playing, watching television, etc., should be able to take place comfortably within the space.

Users: Residents of the unit and guests.

Activities: Watching television, playing cards, socializing, studying, music listening, etc.

Sociophysical Performance: Flexible to allow for a variety of furniture arrangements, natural if possible, views to the outside if possible, secure when not in use, comfortable informal space.

Furniture and equipment:
- sofa
- 2-3 soft chairs
- 2 side tables
- shelving
- 2 lamps
FUNCTIONAL COMPONENTS

Function/Title: Dining area

Description: Each apartment will be supplied with a small dining area which is nothing more than a extension of the living room. It is not intended that the students will be cooking for themselves, however some might desire to do so. It is assumed that most of the residents will buy a meal ticket from the dining service. This space is intended to add more flexibility to the housing units.

Users: Residents and guests

Activities: Dining, game playing, studying, etc.

Sociophysical performance: Adjacent to the living room.

Furniture and equipment:
1 table
4 chairs

Function/Title: Kitchenette

Description: Each apartment will be supplied with a small kitchenette mainly for the preparation of snacks. It is not a full kitchen.

Users: Residents

Activities: cooking

Sociophysical performance: Adjacent to the dining area.

Furniture and equipment:
1 self contained kitchenette unit
counter space
cup boards
FUNCTIONAL COMPONENTS

Function/Title: Bathroom

Description: Each apartment will be supplied with a bathroom for the purpose of conducting personal hygiene.

Users: Residents

Activities: Personal hygiene

Sociophysiological performance: Close to study-bedrooms, natural light not a necessity, ventilation, sound privacy.

Furniture and equipment:
1 shower
1 water closet
2 lavatories with storage below mirror
towel racks

Function/Title: Laundry room

Users: Residents of housing complex

Activities: Washing, drying and ironing clothes

Sociophysiological performance: Natural light not required, should be conveniently located.

Furniture and equipment:
3 washers
3 dryers
1 sink
1 ironing board
1 clothes rod
counter space for folding clothes
FUNCTIONAL COMPONENTS

Function/Title: Trashroom
Users: Residents and Janitorial staff
Sociophysiological performance: Conveniently located

Function/Title: Mop closet
Users: Residents and Janitorial staff
Sociophysiological performance: Conveniently located, storage of mops and buckets.
Furniture and equipment: mop sink

Function/Title: Front desk
Description: The front desk should be an information center for the residents. Recreation equipment, periodicals and newspapers, and additional student use items will be brought to the front desk and sorted into individual mail boxes (2 students/mailbox) also at the front desk. A typing area should be provided behind the desk to be used by the student staff and residence director.

Users: Student staff and housing director
Activities: Mail distribution, typing, reception, information center, etc.

Component spaces: Storage
Sociophysiological performance: Information center for residents and guests, storage for recreational equipment, periodicals and newspaper, mail distribution, should be located at a point of control, close connection with main activities lounge.
FUNCTIONAL COMPONENTS

Furniture and equipment:

125 mailboxes
1 typewriter
1 typewriter's station
1 chair
1 telephone
1 magazine rack

Function/Title: Activities lounge

Description: The activities lounge is for the use of the residents and their guests. A student should be able to relax and take a break from studying while playing pool, ping pong, cards, watching T.V., or just conversing with friends.

Users: Residents and guests

Activities: T.V., pool, ping pong, cards, conversation, etc.

Sociophysical performance: A place to relax, etc. and interact with other students.

Furniture and Equipment:

1 pool table
1 ping pong table
sofas
chairs
card tables
FUNCTIONAL COMPONENTS

Function/Title: Study lounge

Description: The study lounge should be a space where students can remove themselves from the interruptions of their rooms for the purpose of studying.

Users: Residents

Activities: Studying

Sociophysical performance: Conducive to studying, adequate sound privacy

Furniture and equipment:

- study carrels
- study tables
- lamps
- soft chairs
FUNCTIONAL COMPONENTS

Function/Title: Director’s office

Description: The Housing director is responsible for housing programs and coordination of housing activities. He/she has some contact with the residents but also has a lot of paper work to do. In addition he may occasionally have small conferences with 3-4 people in his office.

Users: Director

Activities: Program and activity coordination, paper work, conferences

Sociophysical performance: "Commanding" position inappropriate, should be easy to find, connected with front desk.

Furniture and equipment:
1 desk with chair
2 soft chairs
shelving
1 telephone

Function/Title: Dining Facilities

Description: These spaces are being programmed in the student activities center portion of the complex so that the students may have a wider variety from which to choose. It would be possible for the students to purchase a meal plan from the cafeteria but other options would also be open to them.
FUNCTIONAL COMPONENTS

Function/Title: Parking

Description: By following the University's plan to create a perimeter parking scheme whereby on-campus parking is essentially eliminated there will not be any on-site long term parking facilities provided for the housing complex.
STUDENT ACTIVITIES CENTER FUNCTIONS - GENERAL SPACE REQUIREMENTS
INTRODUCTION

It doesn't take a new student at Ball State very long to realize that there are very few places on or near campus where he or she can socialize and interact with other students outside of where he or she may live. On campus, the student center, the Commons in Lafollette complex, and the Dugout in Studebaker complex have proven to be less than satisfactory. Aside from these places, as I have already mentioned, the only place within walking distance of the university where students can go is the University Village. Within the Village there exists approximately 20 shops ranging from a small gift shop to a large clothing store. There are 2 bars, some 5-6 eating places, one bank, a few hair salons, and 2 gas stations.

In order to accurately predict the commercial needs for the Ball State area it would be necessary to have a market study done. Originally I had assumed, for the purposes of this project, that the university could support a 100% increase in the commercial facilities that already exist in the Village. However, after further examination of the problem it was decided to reduce this figure while still maintaining a variety of shops.

As I mentioned earlier, McKinley Court is to be completely student oriented and that the facility should appropriately convey this message to the student community. This might be done through a basic organization of spaces such that the student is exposed to a broad spectrum of functions and activities merely by passing by or through the facility. The building organization should be open enough to allow an ease of movement yet complex enough to generate a desire to explore and participate.
This facility also has an obligation to be a "good neighbor" and to contribute not only to the Ball State community but to the surrounding Muncie community as well. Special attention should be given to the scale problems which exist between the residential area to the immediate southwest and north as well as the community complex across the street (College of Architecture and Planning, College of Business, and Bracken Library).

A thoughtful effort should be made to enclose little of the site as possible and to relate to the green space that will remain while reinforcing its positive contribution to the area.

Additional considerations should include: recognition of circulation patterns in the area (both pedestrian and vehicular); servicing implications and the conflicts that are frequently generated; climatic conditions and exterior space usage; and materials systems presently in use in the adjacent university community.
FUNCTIONAL COMPONENTS

Function/Title: Student activities center

Users: Ball State students, staff, faculty, and Muncie residents

Activities: A variety of commercial facilities, student activity spaces

Component spaces:

COMMERCIAL FACILITIES
1. Art Supply Store
2. 24-Hour Convenience Foods Market
3. Clothing Shop
4. Coffee Shop
5. Delicatessen
6. Dining Areas, Sidewalk Cafe/Terrace Dining

ADMINISTRATIVE FACILITIES
1. Director's Office
2. Asst. Director's Office
3. Secretarial & Reception

GAMES SPACES
1. Games Area Manager's Office
2. Pinball
3. Vending Lounge
4. Billiards
5. Table Tennis
6. Space(s) for miscellaneous Table Games
7. Multipurpose Space
8. Multipurpose Space, Storage Room(s)
9. Multipurpose Space, Lobby

MISCELLANEOUS STUDENT SPACES
1. Student Organizations' Offices
2. Student Organizations, Common Staff Office
3. Exhibition Space
4. Lobby(ies)/Lounge
FUNCTIONAL COMPONENTS

Component spaces cont.:  

FOOD SERVICE SPACES  
1. Kitchen at 450 meals/hr.  
2. Manager’s Office  
3. Men and Women’s Locker Rooms  
4. Men and Women’s Toilets  
5. Receiving  
6. Maintenance Areas  
7. Refrigerated Storage  
8. Dry Storage  
9. Serving Area(s)  
10. Dining Areas, Snack Foods  
11. Dining Areas, Cafeteria  
12. Dining Areas, Terrace Dining

Sociophysical performance: Recognition of circulation patterns (both pedestrian and vehicular); should relate to students living in residence halls; strong connection with housing in complex; spaces should allow for impromptu happenings at any time; people should be presented with a variety of choices while walking by or through the facility; strong inside-outside relationships should be explored and employed; serving stores should be accomplished with minimal conflict between it and pedestrian traffic.

Ownership: It is assumed that this facility will be owned and operated by BSU and individual store spaces will be leased to private interests.

Parking: Provide 36 short term parking spaces with drop off area adjacent to the facility.
SPACE DESCRIPTIONS

COMMERCIAL FACILITIES

There was no set programming design criteria for the design of these spaces. Approximately 75% of the shop sizes were used for storage while the rest was allocated to sales. The stores, however, were required to have commercial frontage on two sides: outside-inside.

ADMINISTRATIVE FACILITIES (700 sq. ft. total)

1. Director's Office (200 sq. ft.)

The building director is responsible for programs and coordination of building use. He does mostly desk work but will probably have small conferences of 3-4 persons in his office on occasion. He works closely with the secretary/receptionist who controls traffic to and from his office.

A "commanding" position is inappropriate. His office should be away from the hubub of activity, however it should be easy to find.

2. Asst. Director (200 sq. ft.)

All previous applies.

3. Secretary/Receptionist (300 sq. ft.)

The secretary/receptionist is mostly involved with routine paperwork and answering questions. She works closely with both the Director and Asst. Director and should have close visual contact with both. She is also responsible for controlling the traffic to and from both of these offices. Waiting for 5-6 persons should also be provided.
SPACE DESCRIPTIONS

GAME SPACES

1. Games Areas Manager's Office (150 sq. ft.)

This individual controls access to and use of the games equipment. Checks out needed equipment. Makes change. Visually oversees all "game areas" from his office. The latter is mandatory. He needs a desk plus lockers or racks for miscellaneous items related to the games to be described.

2. Pinball (1200 sq. ft.)

An area for coin operated commercial games of skill such as found at the "Sultan's Palace" at the Muncie Mall. The electrical servicing of these devices should be considered as well as the lighting requirements for video screen games. The "pinball imagery" might be explored in creating the space, the lighting, etc.

3. Vending Lounge (400 sq. ft.)

This is a space within the games area where one can get refreshments from coin operated machines. Might consider combining it with the Space(s) for Miscellaneous Table Games to be described below.

4. Billiards (2500 sq. ft.)

Eight 4'x8' pool tables with 6' minimum clearance between sides and ends of tables and adjacent walls or adjacent tables will be provided. Lighting and minimal visual and acoustic distraction should be considered in the design.

Visual control over billiards tables is desirable because of the ease with which table jerseys are damaged by careless or boisterous use.
SPACE DESCRIPTIONS

Some spectacular facilities might be considered. Getting a good view while staying out of the way of players way is a problem. An overhead viewing position might be explored.

5. Table Tennis (1200 sq. ft.)

Five 5'x9' tables with 7' between table ends and walls, 10' between adjacent table ends, 4' between table sides and walls and 6' between adjacent table sides will be provided.

The sport is active. You need good ventilation. Also consider the nuisance, loss of time and cost of lost ping pong balls when designing the space.

6. Space(s) for Miscellaneous Table Games (1000 sq. ft.)

Bridge, euchre, poker, chess...It's not clear whether one large space or two smaller spaces is best. Some games are quieter and slower than others, requiring great concentration. Others are fast moving and generate noisy kibbitzing sessions. Proper design of the space and acoustics could be employed in one large space.

7. Multipurpose Space (3000 sq. ft.)

A space for foreign films, experimental films, silent movies, disco parties, housing parties, club banquets, seminars, or workshops...you name it.

The space should have daytime blackout capability for A.V. use, it should be capable of being "thrown Open" to an exterior terrace area on hot spring and summer nights for ventilation purposes and for exterior tables and chairs for spill over crowds.
SPACE DESCRIPTIONS

"Mid-week madness" type noon events with ear shattering music should go unnoticed by quiet spaces within the building and classrooms nearby.

This is a key social space. It should be located so that events held there tend to be self advertising.

An overhead grid for flexibility of lighting, hanging props, etc. might be considered. The Newman Center just off campus is such a space.

8. Multipurpose Space, Storage Room(s)
   (600 sq. ft.)

For temporary storage of chairs, tables, props... locate on the same floor and nearby. The closer the better.

9. Multipurpose Space, Lobby (800 sq. ft.)

This is basically an ante room for traffic control, to provide a filter look between noises of arriving and departing guests and the activities of the multipurpose room. It can house temporary coat checks in bad weather, coke bars for intermission, displays, registration booths, or other temporary facilities on a small scale.
SPACE DESCRIPTIONS

MISCELLANEOUS STUDENT SPACES

1. Student Organizations, Offices (3 x 100 sq. ft. ea.)

On a lottery basis, or rotational basis, campus wide student organizations are furnished private office spaces. The space is meager. Two small work stations (desks and files or in lieu of that some work conference facilities) are provided in each. The philosophy behind the move is to provide "prime space" with allot of student contact potential to promote campus wide special interest student organizations. Office spaces back around the corner won't do. Because of the shared office space discussed next, these spaces must be clustered.

The offices have a peculiar dual nature to deal with. On the one hand they want to be in the middle of life and activity and open themselves up to it; on the other hand, they need to provide a quiet work environment for talking, telephoning, and even discussing private matters.

2. Student Organizations, Common Staff Office (300 sq. ft.)

A shared office space with 3 secretarial-typing stations and one mimeograph machine for use by those organizations and other campus organizations as available. The full-time equivalent student secretary is there for scheduled use. The other typing stations are for student organization use and for surge use.
SPACE DESCRIPTIONS

3. Exhibition Space (2000 sq. ft.)

Motorcycles, club displays, sorority plant sales...any type of exhibitions of interest...you name it. Whatever it is, quite often it is valuable and the owner will want it locked up at night. Lighting should be flexible. Location and visual accessibility for the public is absolutely essential. Locate for maximum amount of traffic internal and external to the building.

4. Lobby(ies)/Lounge (2000 sq. ft.)

A public building is more than activity spaces connected by circulation tubes. People arrive at public buildings, mill about and associate with one another before and after events in it. Sometimes this activity is more interesting and more volume than the scheduled event. Some buildings have gone to great lengths to create exciting architectural settings for this social activity. Certainly a student center will have a certain amount of milling about. Use the assigned space to greatest advantage in one or more locations in creating special architectural settings for this activity.
SPACE DESCRIPTIONS

FOOD SERVICE SPACES

1. Kitchen at 450 meals/hr. (1200 sq. ft.)

A food service consultant will be retained to design the kitchen. It will not be necessary to worry about the internal equipping or organization, however there are several overall considerations that are mandatory. 

a) The envelope of kitchen space must be relatively consolidated and intact as a simple, clean, unbroken space. A few columns won't hurt, but a lot of wall breaks and a space assembled from miscellaneous cubicles is absolutely unacceptable to the consultants.

b) The receiving dock requires a covered platform 2½-3' high, at least 8' deep and 10' wide. A 35' delivery truck with a turning radius of 45' must be accommodated without blockage of sidewalks, etc.

c) The garbage will be refrigerated and also kept in ventilated, screened interior spaces that will be designed by the consultant.

d) The kitchen should have interconnecting doors with the serving areas for the required dining areas. The shorter the travel distances the better. In no instance may the food in transit from the kitchen to the serving area enter into a public space. The food will be hand carried from the kitchen to the serving areas in steamer pans or moved on a small cart. No steps or stairs between the kitchen and serving areas are permitted.

In summary, three types of connections with other facilities are required: a raw materials entry port, a finished materials exit port, and a waste products exit port.
SPACE DESCRIPTIONS

2. Manager's Office (120 sq. ft.)

Is responsible for the running of the food services area. The manager's office should oversee all food preparation areas and be close to the receiving area.

3. Men's and Women's Locker Rooms (2 @ 120 sq. ft. ea.)

Two rooms where employees may change clothes and lock up their valuables.

4. Men's and Women's Toilets (2 @ 25 sq. ft. ea.)

5. Receiving (300 sq. ft.)

A space adjacent to the above receiving dock for secure holding and accounting for received goods prior to distribution for storage and use. This area is also used for the receiving of goods to be distributed to the commercial facilities.

6. Maintenance Areas (500 sq. ft.)

Mop sinks, vacuum cleaner storage, mobile cleaning supplies carts, storage of cleaning supplies, light bulbs, etc. The method of distribution of this space is roughly 50% for the kitchen and the remainder proportionally assigned to dining area.

7. Refrigerated Storage (250 sq. ft.)

Locate near the "receiving room." Overall shape of this space must be a simple volume.

8. Dry Storage (500 sq. ft.)

Locate near the receiving room.
SPACE DESCRIPTIONS

9. Serving Area(s) (1260 sq. ft.)

To be distributed as needed in the two serving locations—the "cafeteria" serving line and the scramble system for the "snack foods". The dumbbell cafeteria/snack foods service of the BSU student center can be used as a model. Condiments trays and utensil distribution centers and cashier stations must also be included.

10. Dining Areas, Snack Foods (3000 sq. ft.)

The character of the space should be light, informal, exciting...a fun place to go. The artifact (building) should provide part of this excitement but perhaps more importantly the building should be designed as a stage or backdrop for the human element which will give the space its real life. Access of this space to other life or activity in the building could enhance both if handled appropriately.

11. Dining Areas, Cafeteria (3000 sq. ft.)

The character of this space should provide a contrasting experience to the previous. A place for a quiet, reflective meal alone, or with close friends. A place to unwind and linger. Reflective vs. outgoing. Formality vs. informality. Quiet vs. noisy. Intimate vs. expansive. Soft and warm vs. neon, chrome and primary colors. Piano and violin vs. electronic music and hard rock. Candle light vs. strobe lights.

12. Dining Areas, Terrace Dining

An outside dining area adjacent to the cafeteria.
Spatial Summary
## SPATIAL SUMMARY

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<th>No. Spaces</th>
<th>Area Each</th>
<th>Subtotal Net Assign. S.F.</th>
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### STUDENT ACTIVITIES CENTER

### COMMERCIAL FACILITIES

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<tr>
<td>Multipurpose space, Lobby</td>
<td>1</td>
<td>800</td>
<td>800</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>(10,850)</td>
</tr>
<tr>
<td><strong>MISCELLANEOUS STUDENT SPACES</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Student Organizations, offices</td>
<td>9</td>
<td>100</td>
<td>800</td>
</tr>
<tr>
<td>Student Organizations, Common Staff office</td>
<td>1</td>
<td>300</td>
<td>300</td>
</tr>
<tr>
<td>Exhibition space</td>
<td>?</td>
<td>2000</td>
<td>2000</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>(5100)</td>
</tr>
</tbody>
</table>
## SPATIAL SUMMARY

### FOOD SERVICE SPACES

<table>
<thead>
<tr>
<th>Space Description</th>
<th>No.</th>
<th>Area Each</th>
<th>Subtotal Net Assign. S.F.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kitchen % 450 meals/hr.</td>
<td>1</td>
<td>1200</td>
<td>1200</td>
</tr>
<tr>
<td>Manager's office</td>
<td>1</td>
<td>120</td>
<td>120</td>
</tr>
<tr>
<td>Men's and Women's locker room</td>
<td>2</td>
<td>120</td>
<td>240</td>
</tr>
<tr>
<td>Men's and Women's toilets</td>
<td>2</td>
<td>25</td>
<td>50</td>
</tr>
<tr>
<td>Receiving</td>
<td>1</td>
<td>300</td>
<td>300</td>
</tr>
<tr>
<td>Trash room</td>
<td>1</td>
<td>500</td>
<td>500</td>
</tr>
<tr>
<td>Maintenance areas</td>
<td>?</td>
<td>500</td>
<td>500</td>
</tr>
<tr>
<td>Refrigerated storage</td>
<td>1</td>
<td>250</td>
<td>250</td>
</tr>
<tr>
<td>Dry storage</td>
<td>1</td>
<td>500</td>
<td>500</td>
</tr>
<tr>
<td>Serving area(s)</td>
<td>?</td>
<td>1260</td>
<td>1260</td>
</tr>
<tr>
<td>Dining areas, Snack foods</td>
<td>1</td>
<td>3000</td>
<td>3000</td>
</tr>
<tr>
<td>Dining areas, Cafeteria</td>
<td>1</td>
<td>3000</td>
<td>3000</td>
</tr>
<tr>
<td>Dining areas, Terrace dining</td>
<td>?</td>
<td>2000</td>
<td>2000</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td></td>
<td><strong>(12,920)</strong></td>
</tr>
</tbody>
</table>

### MECHANICAL EQUIPMENT SPACE

<table>
<thead>
<tr>
<th>Equipment room</th>
<th>No.</th>
<th>Area</th>
<th>Subtotal</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2</td>
<td>5600</td>
<td>11,200</td>
</tr>
</tbody>
</table>

**Total Net Assignable S.F. = 107,616**

**Gross S.F. = Net / .65 = 165,563**

(Net Assignable S.F. is the actual, usable, programmed space. The Gross S.F. includes areas occupied by walls, non-programmed circulation spaces, required toilets, janitorial spaces and similar other spaces.)
CLIMATE INFORMATION
CLIMATE INFORMATION

Munce and immediate vicinity:

Growing season __________________________ 160 days
Last killing frost ________________________ May 1-5
First killing frost _________________________ Oct. 10-15

Prevailing winds:
Southwest (spring, summer, fall)
Northwest (winter)
Approx. avg. 10 mph.

Tornado threat; slight (greater to southwest)
Thunderstorms; relatively frequent in summer;
less than to the south; local

<table>
<thead>
<tr>
<th>TEMPERATURE:</th>
<th>Month</th>
<th>Average Degrees</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>January</td>
<td>27</td>
</tr>
<tr>
<td></td>
<td>February</td>
<td>28</td>
</tr>
<tr>
<td></td>
<td>March</td>
<td>40</td>
</tr>
<tr>
<td></td>
<td>April</td>
<td>50</td>
</tr>
<tr>
<td></td>
<td>May</td>
<td>61</td>
</tr>
<tr>
<td></td>
<td>June</td>
<td>72</td>
</tr>
<tr>
<td></td>
<td>July</td>
<td>74</td>
</tr>
<tr>
<td></td>
<td>August</td>
<td>73</td>
</tr>
<tr>
<td></td>
<td>September</td>
<td>66</td>
</tr>
<tr>
<td></td>
<td>October</td>
<td>54</td>
</tr>
<tr>
<td></td>
<td>November</td>
<td>41</td>
</tr>
<tr>
<td></td>
<td>December</td>
<td>30</td>
</tr>
</tbody>
</table>

Annual Average: 51 degrees
Frost line; approximately 3'-0"
High humidity, often coupled with high temperatures
A moderate climate permitting construction throughout most of the year.
CLIMATE INFORMATION

PRECIPITATION:  

<table>
<thead>
<tr>
<th>Month</th>
<th>Average Inches</th>
</tr>
</thead>
<tbody>
<tr>
<td>January</td>
<td>2.8</td>
</tr>
<tr>
<td>February</td>
<td>3.0</td>
</tr>
<tr>
<td>March</td>
<td>3.5</td>
</tr>
<tr>
<td>April</td>
<td>4.5</td>
</tr>
<tr>
<td>May</td>
<td>3.7</td>
</tr>
<tr>
<td>June</td>
<td>3.0</td>
</tr>
<tr>
<td>July</td>
<td>3.2</td>
</tr>
<tr>
<td>August</td>
<td>3.6</td>
</tr>
<tr>
<td>September</td>
<td>2.5</td>
</tr>
<tr>
<td>October</td>
<td>2.8</td>
</tr>
<tr>
<td>November</td>
<td>2.7</td>
</tr>
<tr>
<td>December</td>
<td></td>
</tr>
</tbody>
</table>

Annual Average: 37.5"
Average monthly rainfall: 3.1"
Average annual snowfall: 20"-25"

Cloud Cover: daily average

65-75% Spring - Mar. Apr. May
50-60% Summer - June July Aug.

Muncie area has shortest growing season and longest period of freezing temperatures in the state. Statistics are based on a monthly average from 1931-1960.

Primary Source: Natural Feature of Indiana, Indiana Academy of Science.
## SOLAR DATA

### Summer Sun Angles

<table>
<thead>
<tr>
<th>AM</th>
<th>PM</th>
<th>AZIMUTH</th>
<th>ALTITUDE</th>
</tr>
</thead>
<tbody>
<tr>
<td>NOON</td>
<td></td>
<td>180-0</td>
<td>73-30</td>
</tr>
<tr>
<td>11:00</td>
<td>1:00</td>
<td>138-0</td>
<td>69-0</td>
</tr>
<tr>
<td>10:00</td>
<td>2:00</td>
<td>114-0</td>
<td>60-0</td>
</tr>
<tr>
<td>9:00</td>
<td>4:00</td>
<td>99-0</td>
<td>57-30</td>
</tr>
<tr>
<td>4:30</td>
<td>7:30</td>
<td>59-0</td>
<td>0-0</td>
</tr>
</tbody>
</table>

**Degrees-Minutes**

### Fall and Spring Sun Angles

<table>
<thead>
<tr>
<th>AM</th>
<th>PM</th>
<th>AZIMUTH</th>
<th>ALTITUDE</th>
</tr>
</thead>
<tbody>
<tr>
<td>NOON</td>
<td></td>
<td>180-0</td>
<td>50-0</td>
</tr>
<tr>
<td>10:00</td>
<td>2:00</td>
<td>138-0</td>
<td>41-30</td>
</tr>
<tr>
<td>8:00</td>
<td>4:00</td>
<td>110-30</td>
<td>22-30</td>
</tr>
<tr>
<td>6:00</td>
<td>6:00</td>
<td>90-0</td>
<td>0-0</td>
</tr>
</tbody>
</table>

**Degrees-Minutes**

### Winter Sun Angles

<table>
<thead>
<tr>
<th>AM</th>
<th>PM</th>
<th>AZIMUTH</th>
<th>ALTITUDE</th>
</tr>
</thead>
<tbody>
<tr>
<td>NOON</td>
<td></td>
<td>180-0</td>
<td>26-30</td>
</tr>
<tr>
<td>10:00</td>
<td>2:00</td>
<td>150-30</td>
<td>20-30</td>
</tr>
<tr>
<td>8:00</td>
<td>4:00</td>
<td>127-0</td>
<td>5-30</td>
</tr>
<tr>
<td>7:30</td>
<td>4:30</td>
<td>121-0</td>
<td>0-0</td>
</tr>
</tbody>
</table>

**Degrees-Minutes**
DESIGN GOALS
HOUSING DESIGN GOALS

- Create a housing project that has an atmosphere of community and/or family as opposed to an institutional one.

- Provide students with a variety of levels at which they may interact with one another.

- Create an environment people like to be in and around; one they can identify with.

- Create an environment that has a variety of indoor and outdoor recreation and interaction spaces that will heighten one's living experience.
STUDENT ACTIVITY CENTER DESIGN GOALS

- provide a STUDENT "place" that will act as the focal point on campus.

- provide an exciting place for STUDENT interaction.

- provide a variety of shops and activities that will meet some of the needs of the BSU community.
BUILDING TYPES ANALYSIS
INTRODUCTION

A building types analysis is a study of prototypical building types that are similar to this thesis project. The analysis is done in an attempt to try and find a fit between the formal composition and the functional components of a building by looking at such things as the concept, parti, footprint, circulation, structure, mechanical systems, and the correlation and spatial arrangements. This type of analysis is done in an attempt to gain more valuable knowledge about a particular building type so that one might have a more fully realized project.

Analysis #1
Students' Union Housing, University of Alberta, Edmonton, Canada.
Architects: Diamond and Myers

Analysis #2
Student Apartments, "Rust City," Brockport Campus, SUNY, Brockport, New York.
Architects: Caudill Rowlett Scott

Analysis #3
Architects: Arrowstreet
Analysis #1

Project: Students' Union Housing, University of Alberta, Edmonton.

Architects: Diamond and Myers

The Students' Union Housing project is just one building in an entire master plan done by Diamond and Myers for reclaiming street space for buildings in Alberta. Through other construction of this type an all-indoor pedestrian network would be generated for the University of Alberta.

Concept/ Parti and Footprint

One can look at the concept of this building from a couple of points of view. For example, one might look at it as a tower (parti) turned on its side where there is a service core running up through the middle servicing the served spaces on the perimeter. However, one might also look at it as two walls that enclose a relatively long narrow space (footprint) which serves the walls that enclose it and this in many respects is no different than the tower parti.
Circulation

Linear pedestrian circulation occurs throughout the structure at the concourse level. From the concourse level and the exterior of the building one is able to gain access to the stairwells which are the only means of vertical circulation throughout the entire structure. There are an excessive amount of stairwells largely due to the fact that each stairwell only services 2 living units per floor and there is no linear circulation above the concourse level. If you have a friend who lives a couple of modules over you are forced to go all the way down to the concourse level then over and up again.

By raising the concourse up 1½ levels, vehicular traffic and parking is able to take place throughout the length of the building.

At the concourse level there are pedestrian links between existing structures and provisions have been made to link up with any additional building that might be built adjacent to the Students' Union Housing.

In terms of circulation, the vertical circulation and the linear circulation between living units might have been dealt with more effectively.
Structure

This building utilizes an ordinary cast in place concrete flat-plate and column structural system for the two buildings on either side of the concourse. The only untypical structural elements are the precast T-beam concourse floor and its light steel and plexiglas skylight.

The modular arrangement of this building could or might have lent itself to an industrialized building system quite easily.
Mechanical

The majority of the mechanical supply lines, HVAC, gas, water, steam, etc. are run beneath the precast T-beam concourse floor.

The exposed heating and cooling ducts that run throughout the length of the galleria act as sculptural elements and tend to give the space a mechanistic expression as well as reinforce the linear movement which takes place throughout the length of the building. The HVAC risers as well as being sculptural also double as kiosks.

Due to the extreme winters this mechanical sandwich has to be heated in order to survive.
Correlation and Spatial Arrangement

Students' Union Housing consists of two seven storey buildings which contain both commercial and housing facilities. Together these two buildings enclose a space that is some 900 feet long. By enclosing the space between them forming a galleria and by giving the apartment units a second exposure on the galleria side the exterior wall per apartment was drastically reduced. However there are also problems generated by enclosing the space between. The galleria has proven to be a very effective noise generator. However, the design of the apartments recognized this potential by placing all of the bedrooms on the exterior surface of the building with the living rooms overlooking the galleria.

Summary

The Students' Union Housing project has the image of being a micro-city with all its amenities included. The concept of the building is a very strong one however it has some very serious problems. The largest of these is the way in which it deals with vertical circulation and the way in which the apartment units relate to one another.
Analysis #2

Project: Student Apartments, "Rust City,"
Brockport Campus, SUNY, Brockpory, NY.

Architects: Caudill Rowlett Scott

*Rust City,* a student housing complex at Brockport College, Brockport, NY was the result of a design-build competition held by the college whereby the architects, in order to compete, had to team up with a contractor. To ensure that the entries would be judged on quality alone and not on the lowest cost, the college established a challenging fixed price of $5825 per student. Caudill Rowlett Scott won the competition with the only industrialized scheme among the entries.

Site/ Circulation

*Rust City* is located on a 2 acre site on the edge of the Brockport campus. Whereas most of the buildings at Brockport are monotonously far apart, the buildings that make up this housing complex are arranged around a meandering walk and open plazas to give the entire complex a village-like atmosphere or community. This along with a commons building and outdoor amphitheater in the center of the complex give the students a sense of place.

Vehicular traffic and parking are handled at the perimeter of the site and access to the units themselves may only be gained off of the walks and plazas that thread through the complex.
Structure

Caudill Rowlett Scott employed a French industrialized building system known as Systems III or the Rouen System developed by French architects Lods, Depont and Beauclair for a housing project in Rouen, France. This system features a steel frame bolted together on site. Columns were first installed and then the prefabricated 800 square foot steel floor trays allowing clear spans of 20'x40' were lifted and fastened in place. These 800 square foot trays, including truss frames, reinforced gypsum floor panels, spandrels (corten), curtain wall fittings, wiring for electric resistance heating and plumbing were all preassembled on the nearby warehouse site and trucked to the site ready for installation.

Major advantages were:

1. Reduced construction cost and time.
2. On site construction was reduced.
3. The greatest convenience was that the exterior wall panels could be installed from the inside, eliminating the need for scaffolding.
Spatial Arrangement

Each of the living units in this complex is a self contained unit including at least a study-bedroom, kitchen, dining and living room. A two bedroom unit (4 students) is the ideal arrangement for the 20' x 40' steel tray module, however, by fireproofing one column between trays, removing the demountable partitions and relocating a closet it is possible to create both a one and three bedroom unit from two trays. Baths and kitchens, due to the plumbing, are the only spaces that are absolutely fixed.

All units have views out onto the walks and plazas that run between the units and views to the liberal green areas from the bedrooms.

Circulation for the 2 to 4 storey units was reduced to a partially covered exterior stairs and balustrades connecting upper level apartments. In order to keep from running the stairs more than three levels, the street level was bermed up so that the 4 level units could be dropped a half level. A scooped out space between the unit and the berm still allows light to enter the sunken apartments.
Summary

The use of an industrialized building system dictates a very rigid form statement which is often times boring and monotonous. CRS, however, was able to overcome this by varying the heights of the individual buildings, staggering them in their organization on the site around meandering walks and plazas to create a community atmosphere and sense of place, and by adding exterior stairs and balustrades to the buildings to break up the facades whereby the street facades begin to develop a rythum.

In terms of the siting I believe the parking might have been better handled by breaking it up.
Analysis #3


Architects: Arrowstreet

Worcester used to be an all commuter college but saw an advantage of housing a core of students on campus that would identify with it.

Site/ Circulation

The unifying design element of the project is the street. It threads Its way through the complex and acts as an access to the housing units and as a place to meet and talk. Near the center of the complex is an amphitheater, this along with paved terraces adjacent to the road set among trees create activity nodes. The street is almost purely pedestrian, only the necessary service vehicles are allowed on the road.

The buildings are arranged on a very heavily wooded site responding to a "village" concept of living.
Structure and Unit Organization

Chandler Village consists of 26 two to four and five storey housing units. There are 5 basic types of these brick and aluminum clad steel frame buildings. Each building is composed of 11 standardized parts (living room, dining room, kitchen, baths, bedrooms and sleeping lofts). There are three additional parts that include a steel fire escape, balconies and the unit entry stair tower.

Building types provide living accommodations ranging from a single room to a 14 student collective.

Advantage of the system: 6 living-type arrangements can be organized in a number of different ways within a single building and it is the way in which they are organized that determines which of the six building types the house is.

Summary

The Fire Marshal has regarded the lofts as unsuitable for sleeping which severely hampers space requirements. The large group collectives have proven to be the least popular units to live in.
BIBLIOGRAPHY


Preiser, Wolfgang F. E. Behavioral Design Criteria in Student Housing, Environmental Systems Lab, College of Architecture, Virginia Polytechnic Institute, 1969.


"Rust City," Progressive Architecture, August 1975.

. Student Housing, Education Facilities Lab, 1972.