Alparker Residence; Huntington, Indiana

Steven L. Park
R.R. 3
Warren, Indiana

February 20; 1981
The expressed purpose of this book is to comprehensively document the progression of the project from the programming stage to the final product. The book is organized in a linear fashion beginning with the program and client research through concept study, schematic design, and design development, revisions, and the final product. The book is so designed that it is not necessary to read the full extent of the book to understand the basics of the final design. This is only the case if, all of the design considerations and the progression of thought is desired. The book is adequately divided into sub-headings to answer most questions. The final design is explained in a factual manner in the last chapter.
ACKNOWLEDGMENTS

This list of individuals have directly or indirectly contributed their design, and technical expertise. I would like to thank them for their direction and comments in the completion of this project.

Robert Underwood professor
Daniel Nobbe professor
Robert Kingsley professor
Paul Laseau professor
Jack Wyman professor
John Hertz professor
Wayne Nye manufacturer representative
Ira Banter contractor

Jane Suddarth student
Tom Engle student
Kevin Callahan student
Deb Wetzel student
Joe Mrak student
Leslie Larkin student

Ball State University; Muncie, In
Huntington County Planning Commission; Huntington, In
Huntington County Department of Natural Resources; Huntington, In
Ross Supply; Marion, In
Banter Construction Co.; Van Buren, In

And a special thanks to the support from my family.
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SUMMARY

This project is an investigation into housing of single families in the near future dealing with energy efficiency. The function of the unit is to provide the essential comforts of a home and reduce the outside dependence on energy. The unit is to function as a normal house carrying on with every day functions; as well as containing a large multi-purpose space and a small design studio. These spaces require the possibility of expansion in the future.

The design is divided into three stages: (1) living area which is to be completed first, (2) the studio next in sequence is to be added after the living space is constructed, (3) the multi-purpose space is the last stage and it is to be constructed when money is available to the clients.

The main emphasis of the design process is to be placed on creating a housing unit that is self-supportive, requiring a minimum of operation cost. An investigation into the development of the surrounding land is a very important consideration in maintaining a state of energy efficiency and is to be included into the design process. The building envelope should be able to provide a maximum amount of comfort required for the occupants from available sources on the site and in the environment.
INTRODUCTION

The present economy has been greatly affected by the rising cost of energy. It has also affected the attitude of people all over the United States. People are beginning to realize their wastefulness and are looking for living alternatives. There is much research being done now in many of these areas, yet there is a need for much, much more. Now that research is being done, the next step is for people to take the incentive to implement and experiment with these findings.

The average person is now looking for ways to conserve any amount of energy possible to help ease the financial burden of rising energy costs. People are beginning to look to the Architect for his knowledge and ability to correlate complex issues. More importantly, people are looking for a strategy for living more efficiently. The Architect is now beginning to recognize and accept this responsibility to his client, and will continue to grow through the age. It is the purpose of this program to identify the issues and possible areas of research.
PERSONAL DATA:

NAME: Mr. S. Alpark
AGE: 25
OCCUPATION: Designer
SCHOOLING: Bachelor of Design
HANDICAPS: None

SPECIAL INTERESTS: He enjoys physical activities by way of sports or physical labor. The sports he enjoys are racquetball, basketball, volleyball, archery, and target shooting. His major interests however, is with his family, his activities revolve around them and his work. Other interests include cooking, sketching, reading, and carpentry.

MARRIED: Yes
YEARS: Two

SPOUSES NAME: Mrs. M. Alpark
AGE: 23
OCCUPATION: English Teacher
SCHOOLING: Masters in English
HANDICAPS: None

SPECIAL INTERESTS: Her major interest is in dance and theater. In her free time she would like to teach dance. Presently she is working with a local live theater production, teaching and performing. Her major interests are like wise her family and enjoys children. Other interests include reading, entertaining, movies, and children.
FAMILY DESCRIPTION: Both come from very close families. His family is small with sixteen members, while her family is very large with over sixty members. The immediate members of both families get together often. The home relationship is very close and family oriented. They enjoy doing things together, but also pursue individual interests in their free time. Both are very active in community affairs, and are members and chair persons of several projects. They have no children presently, but plan to have five children.

DAILY SCHEDULE:

6:00    wake-up    grooming
7:00    breakfast
8:00    work-Mr. & Mrs.
9:00
10:00   
11:00   
12:00   meet for lunch
1:00
2:00
3:00    home-Mrs.
4:00    household chores, shopping
5:00    home-Mr.
6:00    dinner together
7:00    dishes, chores
8:00    
9:00    
10:00   relax
11:00   
12:00   bed

COMMENTS: A major concern is energy conservation. They personally lack the technical knowledge to develop a working strategy. They are very open minded and willing to accept a design out of the ordinary. Another concern is in maintenance; they want to be able to maintain and make minor repairs themselves.
There are essentially three design goals that have been established through discussion with the client. They are as follows:

- To go past the normal design considerations involved in present housing designs. To concentrate on a single family unit determining a living strategy for energy self-sufficiency that best fits the needs. There must be consideration and an understanding of present living standards and problems with interior organization. It is not desired to concentrate on one topic to the point of ignoring other relevant problems and issues. It is very important to bring attention to all issues pertinent to the design process and final product.

- A complete design strategy of operation to explain the design operations relating to energy efficiency. This should be accomplished by way of graphic illustration backed with a written explanation.

- The final goal is to have a living space that is pleasant and compatible with the occupants. Giving maximum flexibility to needs as outlined in the program.
Several points must be considered to evolve a design of this type. Listed below are issues that must be considered, investigated, and applied through the design process.

**Pre-Design**

- **Building Types Analysis**: A study of similar project types to gain a better knowledge of how other designers solved design issues. This analysis goes beyond this to other points such as concept, structure, form, circulation, and image.

- **Official Regulations**: An investigation into required official documents from state and county for the construction and code requirements.

- **System Analysis**: Research of existing environmental systems that are presently being applied in residential construction. This is a study of technology analyzing the potentials and failures of the products to determine the best system or make modification to an existing system to best fulfill the needs.

- **Site Evaluation**: An in-depth site analysis of existing conditions. Along with the normal information a special effort is to be made to understand the micro-climate produced by the vegetation and wildlife, and problems inherent to the site, environmentally and otherwise.

- **Site Potential**: A continuation of the site evaluation in examining the site potential. The possibilities available to the site applying information collected from the site analysis and resources available on the site. These are not to be design solutions only possibilities to specific problems.
DESIGN ISSUES (con't)

- IMPACT ANALYSIS: A brief investigation into the effect of changes made to the site. A cause and effect analysis stating changes to problem areas and how it will possibly effect the site, ways of preserving the natural habitat.

- SITE MASTER PLAN: A summation of all the data collected, making a conceptual site plan. This plan will state site changes necessary and location possibilities of structures.

- ANALYSIS OF EXISTING LIVING CONDITIONS: This is an extension of the building types analysis to investigate typical living conditions. The first part is taking an example building type of the area and determine where energy is being lost. The findings are to be represented graphically with written explanations. The second portion is using the same example, examining materials, organization, and construction techniques.

- PROBLEM SOLUTIONS: A priority list of problems formed from above points with a range of solution possibilities. The solutions will be approached from as many views as possible. Such as: high tech systems, material changes, and new wall construction, etc.

- CONCEPT STATEMENT: A statement explaining the concept behind the design, and to help express the purpose of design issues and rationale: The intended purpose of this statement is to better communicate the designer's reasoning to the client.

- SYSTEMS RESEARCH: Investigation into the systems available for a self-sufficient living environment. Some of the manufacturers addressed should pertain to passive and active solar systems, wind generation, and passive support systems (i.e. waterless toilet). The information collected
should be correlated and compared to obtain the most efficient and economical design.

- SYSTEMS ANALYSIS 1: A brief analysis and comparison of the systems proposed to be used. This is to point out problem areas in the design to be addressed and corrected.

- SYSTEMS CONCEPT: A conceptual drawing showing the systems used and how they function together and are intergrated. Also should show the flexiblity of the systems.

- SYSTEMS INTERGRATION: A design issue of space/system/comfort coordination neccessary for a design to properly function.

- STRUCTURES: Structure design and intergration into the overall design scheme.

- PROGRAM COMPARISON: Analysis of the design size with relation to the programed space; comparing the net area to the gross area, and allotted spaces to added spaces.

- CONSTRUCTION STATEMENT: A statement before construction organizing and scheduling the construction process as it relates to the design, site, and client.

- SYSTEMS ANALYSIS 2: A final analysis into the systems ability to supply the required amount of heat. This is to be accomplished by looking at each system separately and combined.

- BROCHURE: The brochure will be in a magazine formate showing neccessary drawings with verbal explanation. This section must be able to stand separate from the final book and explain completely the project. Design/layout of the brochre must be completed before the final drawings are started.

- FINAL BOOK: The final book shows the process and decisions involved in the design solution, from start to finish. The brochure is a component of the final book, that explains the final outcome.
ORGANIZATIONAL DATA (con't)

17
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SYSTEMS ANALYSIS
D.D. (space)
REVISE
CONSTR. STATEMENT

FINAL DRAWINGS
BROCHURE
FINAL BOOK
**SPACE SUMMARY**  
(Assignable square feet only)

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**TOTALAssignable SQUARE FEET**  4680
This is the entry statement into the living area and should reflect the site and design theme. The space must convey the general attitude of security, warmth, and interest. The strength of this space is a strong inside/outside relationship. It should be thought of as a transition space; a continuation of the outside into the inside. Upon arrival into this space a focal point is necessary to provide a direction to visitors. This can be accomplished visually or physically.

**SPACE FURNISHINGS AND EQUIPMENT:** No furnishings are required.

**STORAGE:** A large closet for the storage of guests wraps. It should be close to the entry, but off of the main circulation path.

**SPECIAL CONSIDERATIONS:** As mentioned above a vital inside/outside relationship is necessary. Great care must be given to guide people from outside to transition space inside. This space sets the mood for the rest of the house.

**SPACE RELATIONSHIP:**

MATERIAL REQUIREMENTS: Flooring materials must be durable and able to withstand a heavy traffic load. The floor material must continue from the outside to the inside. The exterior wall should have a large amount of openness, yet with insulative qualities.
The living room is a space provided primarily for formal entertainment. When occupied the space must promote a relaxed atmosphere, conducive to conversation. The Alpark's entertain at least once a month. The largest group of people in this space at one time is between twenty and twenty-five people. These people range from clients to close family and friends. The room itself must make a strong impression on the occupants to stimulate conversation and physically promote interaction. This section along with the dining room are to be less "casual" and more formal than the remaining unit. When not being used for entertainment, a section will be used as a reading room for one or two people. The design should reflect its primary use "formal entertainment" integrating the reading room into it.

SPACE FURNISHINGS AND EQUIPMENT: Sofa, coffee table, three arm chairs, four end tables, baby grand piano. Adequate space must be provided for circulation around furnishings.

STORAGE: Storage is required for items such as ash trays, coasters, magazines, books, and stereo in the form of sheves and cabinets.

SPECIAL CONSIDERATIONS: To maintain a comfortable conversation situation with necessary circulation, the minimal dimensional width of 14'-0" is required. The normal conversation circle must be considered; that being for seated people is 10'-0" and 6'-0" for people standing.
LIVING ROOM (con't)

The formation of several small groups must be designed. Normally people prefer to be in smaller groups than large groups. There must be a comfortable circulation path from group to group. There should not be a through circulation pathway to another space that will disrupt the rooms circulation. A minor circulation path is possible to an outside patio.

SPACE RELATIONSHIPS:

![Diagram of living room layout]

MATERIAL REQUIREMENTS: The materials for the living room must provide a secondary focus, adding to the exterior view and the internal view to the fireplace.
The dining room is to be used in conjunction with the living room for formal entertaining. There is a strong need for a connection with the dining room, kitchen, and living room. It should be a continuation of the living room space promoting circulation and a typical entertaining sequence. Space is required for twelve place settings and adequate circulation. A special strategy must be considered for seating a slightly larger group on special occasions. The room character should change slightly to express the change in function. The main emphasis will feed off of the living room creating a blending action between the kitchen, dining, and living room.

**SPACE FURNISHINGS AND EQUIPMENT:** Dining table for twelve to be seated comfortably, dining chairs, and food storage.

**STORAGE:** Storage must be supplied for a twelve place service, silver, and linens. This is to be built-in units visually displaying the china when not in use.

**SPECIAL CONSIDERATIONS:** An adequate amount of circulation space must be provided around the table, at least 25". Place settings must be in the desirable range for comfort, 29" width. A 2'-0" space per person is required for a comfortable seating arrangement. For allowable dimensions see diagrams below.

The minimum room size for a twelve service table is 10' x 12'. If other furnishings are included circulation becomes inadequate.
DINING ROOM (con't)

SPACE RELATIONSHIPS:

MATERIAL REQUIREMENTS: see the materials requirement for the Living Room.
The kitchen has a very specialized function, that being food preparation. In a country house the kitchen is one of the most important rooms; a room that all other spaces revolve around. It tends to be a focal point for work within the unit. This is where food is delivered, stored, cleaned, prepared, served, consumed, and preserved. Being such a heavy work area through traffic and access must be controlled and manipulated to give the greatest amount of efficiency and uninterrupted space. Since much time will be spent working and relaxing in this area the atmosphere should be very relaxed, yet function as the residential control center. The functionality of the space is the single most important issue, functioning with maximum efficiency. There should be a maximum continuity between: Storage, Cleaning and mixing, Cooking, Serving or storage, Clean-up.

Work areas must be kept away from non-work areas to minimize circulation interferences. Compactness also helps maintain an accessible work area, but must provide space enough for two to six people at one time.

**SPACE FURNISHING AND EQUIPMENT:** Built-in grill, sink, oven, refrigerator, dishwasher(optional), microwave oven, kitchen table and chairs.

**STORAGE:** A pantry space must be provided for the storage of fresh and preserved foods. It must be easily accessible to the work area. Cabinet space must be provided for the storage of cooking utensils and supplies. The base cabinets must exceed ten linear feet and comparable linear feet of wall cabinets.

**SPECIAL CONSIDERATIONS:** Special attention must be given to the comfort of the working space. This can be accomplished by minimizing the reaching distance and stooping height. All cabinet dimensions must conform to the critical dimensions outlined below or clients height.
KITCHEN (con't)

Maximum reach for vertical storage

Maximum height of window sill for supervision of yard

Bottom of sink

Mix-center counter

Wall oven

Lap table

Minimum width of passages

Minimum clearance whenever two people may be working at same time
The kitchen is broken into three essential work centers, the refrigerator, wash-preparation area, and cook-service area. Each area must have adequate storage space, counter space, and necessary utilities and facilities. These areas form the kitchen 'triangle'. Below are shown in diagrams the relationship between these areas (the 'triangle') in common kitchen layouts.

Parallel Wall Kitchen

'L' Kitchen

Single Wall Kitchen

'U' Kitchen
KITCHEN (con't)

A space within the kitchen areas is required for eating. This is for every day meals. Access to an outside eating area is not required but must be considered. The eating area is to be part of the kitchen, but not inter-fer with circulation of the work area.

SPACE RELATIONSHIP:

MATERIAL REQUIREMENTS: The materials adjacent to the work areas must be able to withstand wear, scaring, staining, and easily maintained. The materials recommended for these areas are: stainless steel, ceramic tile, laminate, vinyl, and linoleum. A light color is often preferred to lighten the space and cleanliness.
A multi-functioning room that is basically used for laundry. This, as the kitchen, is a high work area and should be considered as such. Access to an outside clothes drying area is required, therefore provisions must be made including a mud room. The room is to be designed to get in and get the laundry done as quickly as possible. Also an attempt to take the drudge out of doing the laundry should be made by making it as pleasant as possible. Due to the amount of activity in this area, this area should be in a non-congesting section.

**SPACE FURNISHINGS AND EQUIPMENT:** Washer, dryer, wash sink, ironing board, iron, laundry tray, sorting table, and clothes storage.

**STORAGE:** Storage is required for washing supplies, soaps, baskets, irons, brooms, etc. A closet is required for outdoor coats, shoes, and boots; near to the outside door.

**SPECIAL CONSIDERATIONS:** The normal process must be considered to achieve the maximum efficiency of the space. The sequence is as follows:

- Clothes hamper
- Sorting and pre-treating
- Washing
- Laundry tray
- Dryer
- Ironing
- Hangers

This process should not have major interruptions by other activities, and passage ways should be at least 4'-0" wide. Access to an outside clothes drying area must be close proximity to the exterior door. The clothes drying area must hold two heavy washer loads.
SPACE RELATIONSHIPS:

MATERIAL REQUIREMENTS: The materials selected must be very durable and able to withstand constant mopping and cleaning. They should be able to retain water standing for short periods of time. Wall material must be able to withstand moisture and detergents from spashings.
The family room is the recreational center for the household. The equipment being varied must have an orderly element to weave them together, yet not interfering with the space each requires. This is a place of great excitement having created design potential. The atmosphere should lend excitement to the activities, but not distract. The activities generate varied numbers of people, it ranges from two to twenty persons. The space should be sub-divided into smaller units, breaking the scale down to the equipment scale. In so doing allows the room to be as comfortable for two as twenty. An outside relationship is most important, visually and physically. An example is intensifying the view and access to an outdoor recreation area to represent this statement.

**SPACE FURNISHING AND EQUIPMENT:** Pool table, sofa, bar, television, stereo, four chairs.

**STORAGE:** Storage must be provided for recreational equipment, books, magazines, games, etc. A unit adjacent to the fireplace used for fireplace accessories and firewood.

**SPECIAL CONSIDERATIONS:** The inside/outside relation should be studied and manipulated to accent specific areas. Other areas require less openings, such as the television area. Access to a patio space can act as a transition space allowing the space to open up in fair weather.
MATERIAL REQUIREMENTS: Circulation wear is a major consideration in material selection. All materials must wear with heavy use. The wear is to be part of the design considerations.
The bedrooms are of three specific types which are the master bedroom, guest room, and children's room, ranging from least flexible to most flexible. Each type represents its own set of design problems due to the occupants. The master bedroom has the largest square feet per person and contains the master bath. This bedroom is strictly used for sleeping, dressing, and hygiene. The atmosphere must be relaxing to ease the tension before sleeping and to provide a period of time to fully wake-up. There are three key times that must be considered into the design in all bedroom types; they are morning (wake-up), afternoon, evening (sleep-time). Each time represents different needs by ways of light and views. The design must reflect the variation of light due to time, views, and the sequence of use by the occupants.

SPACE FURNISHINGS AND EQUIPMENT: King-size bed, two night stands, side chair, arm chair, two dressers.

STORAGE: A large walk-in closet for storage adjacent to the master bath; one side will be denoted for her clothing, one side for his clothing and seasonal clothing. The short wall will be shelving for linens, shoes, and miscellaneous clothes. In the bedroom the shelving must be built-in for books (light night reading) and a small cabinet to use as miscellaneous storage.

SPECIAL CONSIDERATION: It is desirable to have a balcony where a view of the property is possible. This becomes necessary for a sense of security and less important esthetics. A portion should be covered for protection from elements. See environmental considerations.
MASTER BEDROOM (con't)

SPACE RELATIONSHIPS:

MATERIAL REQUIREMENTS: Materials are a continuation of the materials used in the upper level corridor. The use of materials of warm colors would best provide the proper feeling needed.
The guest room is less specific and must be designed for a variety of occupant types. Presently the room should be basic allowing the outside view to be the predominate design factor. This would allow for the accommodation of a variety of occupants. Later as the family begins to grow, a need to use this room as a nursery or childrens room might arise.

**SPACE FURNISHINGS AND EQUIPMENT:** Queen-size bed, night stand, dresser, side chair, clothes rack.

**STORAGE:** A small closet is the only storage requirement. Consideration of alternate room uses should be designed for flexibility.

**SPECIAL CONSIDERATION:** The space must remain flexible because of the variety of occupants and the possibility of its functional change. There's a possibility in the future that the function could change to a nursery, childrens bedroom, sewing room, or a storage room.

**SPACE RELATIONSHIPS:**

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The children's room represents a multi-function space. Children use their rooms as an entertainment headquarters, sleeping area, and as a place to get away. This is their private domain where they can escape the "grown up" world. The atmosphere must be playful and present a maximum amount of flexibility. This would allow the rearrangement of the space, stimulating the imagination of the children. The most common failure of a child's room is inadequate free and circulation space for their activities and failing to recognize the fact that children do grow up and change.

SPACE FURNISHINGS AND EQUIPMENT: Twin bed per person, dresser per person, three desks and chairs, five chairs, night stand per person.

STORAGE: Each person requires one closet for clothes and storage of seldom used articles. If a space problem arises, the dresser could be built-in there-by freeing some floor space. A changeable toy storage system that can be used for other functions once the child has grown up.

SPECIAL CONSIDERATION: A strategy must be set for the evolution of the room. The program is purposely being left open in this area to make best use of the space. The factors that must be considered are:

- The changing requirements of the space as the children grow.
- Flexibility as the family size grows.
- Stimulation of the space on the children's imagination.
- Use of the space before the family is started and after the children leave home.
- Changing functions of the day due to the children's activities.
MATERIAL REQUIREMENTS: Here the materials must provide a vital component to the design of a playful atmosphere. The materials must withstand abuse and/or not show minor damages. There is a necessity that the material have maximum flexibility for multiple arrangements.
MASTER BATH

This is the private bath adjacent to the master bedroom used primarily for bathing and grooming. The main use time will be 6:00-8:00 a.m. and 6:00-11:00 p.m. There will be a maximum of two people using this room at one time, but must be spacious enough to be comfortable. Being used by only two people, privacy is not a major concern between them. This will allow the bath to become part of the bedroom with a transition space for dressing.

SPACE FURNISHINGS AND EQUIPMENT: Tub/shower unit, lavatory, vanity, water closet, mirror, dressing mirror, make-up counter, chair, clothes rack, drying areas.

STORAGE: Closet for the storage of linens, toiletries, and cleaning supplies. Ideally for convenience this closet could be a continuation of the bedroom closet, but some means of partial separation must be provided. Storage for presently used toiletries and medicines in the vanity for easy access.

SPECIAL CONSIDERATIONS: The layout with the transition space must be carefully evaluated, taking into consideration the transmission of sound and light.

SPACE RELATIONSHIPS:
The bath is the most frequently used bathroom facilities in the house. This is used by persons, guests and family, throughout the day for elimination. It will also be used as the primary bath for occupants in the guest room; and the children later. To be used for bathing, dressing, and elimination. Do to the amount of activity, space should be required for comfortability. Later there could be as many as four children at one time performing different tasks in this bath. The atmosphere should be spacious and rather elegant. One other consideration is the impact of guests, most guests tend to determine the success of the house on the size of the bath.

SPACE FURNISHINGS AND EQUIPMENT: Tub/shower unit, two lavatories, water closet, mirror, drying area, vanity, clothes rack.

STORAGE: The only storage required is a small closet for the linens and toilettries, and the vanity for every day articles.

SPECIAL CONSIDERATIONS: The fact that the bath is to be used by guests and residents represents the major problem to be considered. This must be resolved to create a space functionable to both occupant types.

SPACE RELATIONSHIPS:
These rest rooms are used by occupants, guests, students, etc. in the studio and multi-purpose space. The space is divided for a men's and women's room with the minimum space required for fixtures. However, they must conform to handicapped regulations. The ornamentation is to be kept at a minimum for cost, standard commercial materials may be used. The maximum combined occupancy of the space is an estimated 120 persons and an average of twenty.

SPACE FURNISHINGS AND EQUIPMENT: Men: one water closet, two urinals, one lavatory, mirror, trash can, counter. Women: Two water closets, one lavatory, mirror, trash can, counter.

STORAGE: A small adjoining janitors closet containing cleaning supplies, toiletries, and mop sinkk. This facility will be used for cleaning the studio and multi-purpose space.

SPECIAL REQUIREMENTS: Must meet handicap requirements as stated in the codes. Size should be at minimum due to cost.

SPACE RELATIONSHIPS:
The mechanical room is to be used for storage of the mechanical equipment and storage materials. The area necessary for this equipment will be determined with the design of the heating/cooling system in the design process.
An area used for the storage of two cars and outdoor equipment. The space is to include a 6'-0" x 6'-0" gardening room, which would be used for the storage of seeds, plants, soils, etc. The garage is a specific function area and should be so designed, as well as economically as possible. The interior is not required to be finished, but should be easily organized.

**SPACE FURNISHINGS AND EQUIPMENT:**

**STORAGE:** A storage area for gardening supplies mentioned above. The area around the cars can be used for some storage. A space to one side of the garage should be free for larger equipment, etc.

**SPECIAL CONSIDERATIONS:** The minimal dimensions for a two car garage with storage is 27'-0" x 26'-0". Two garage doors are to be supplied.

**SPACE RELATIONSHIPS:**
The patio is a continuation of the inside space to the outside or a transition space. Its main function is for relaxation and entertainment, to be used extensively by two to thirty people. Access to the patio will be from three primary areas; the multi-purpose space, family room, and studio, but other areas should flow into it.

**SPACE FURNISHINGS AND EQUIPMENT:** Three lounge chairs, table, ten folding chairs, grill.

**STORAGE:** Storage is in conjunction with the garage for the table and chairs.

**SPECIAL CONSIDERATIONS:** Any place where the edge of the patio is raised above the ground level a barrier or handrailing must be provided to prevent injuries. At access points to the patio a flat plane 2'-0" on each side and 5'-0" in front must be provided.

**SPACE RELATIONSHIPS:**

```
      fam.       l.r.       d.r.       public bath
      |          |            |
      PATIO    |   |         |
      |          |   |         |
      |          |   |         |

36```
The studio is to be a small area for two to three draft persons (maximum) with at least one drafting table a person. The work type is general design, ranging from graphics to small appliance design. The job load is comprised of smaller projects, but come in very consistently and slowly increasing. At some point he hopes to have more a blend of work with a couple of larger jobs. With the unpredictability of the jobs, the space must be allowed to expand and contract as the load varies. At some time, economy willing, he would like to expand in size. The atmosphere must be conducive to a working space for design, inspirational. It is felt that happiness and contentment leads to the best productivity; and this space should maintain this feeling.

SPACE FURNISHINGS AND EQUIPMENT: Three drafting tables, three work tables, twelve stools, module partitions (to be designed), one light table, small shelving modules (to be designed), tack board.

STORAGE: A large storage room for miscellaneous materials, desks, model materials, etc, and past projects. Small storage cabinets for drafting materials and supplies. This area must have a counter-top with a small sink for coffee machine.

SPECIAL CONSIDERATIONS: The major concern for this space is to maintain room for temporary job expansion, as mentioned above. At all times the space must be divided into three sub-units; conference area, work area, and resource area. The flexibility must extend to individual spaces where each draft persons can arrange and maintain their own space. This will be a form of self-expression which will provide a much more interesting space. A great deal of pin-up space is always necessary for a studio, it must be integrated into the general design scheme.
STUDIO (con't)

SPACE RELATIONSHIPS:

MATERIAL REQUIREMENTS: The materials must maintain a certain amount of flexibility for different projects and sizes of projects. Again the materials should not show minor damages.
This is a large space to be used for a variety of purposes, therefore, it must be constructed to have the greatest amount of flexability possible. A brief list of projected activities for this space has been provided by the client. They include:

- A facility for community organization meetings ranging from 4-H meetings to special community classes from outside sponsors.

- A facility for large gatherings, formal or casual, particularly family groups for special occasions.

- Instruction area for special classes taught by Mrs. Alparr; these classes will possibly be dance, theater, and music. This has been a special interest of the Mrs. to teach, especially young children.

- In the future perhaps the design studio could expand into this space if business progresses.

This space must have the ability to transform its image to accent and facilitate its application. Due to the size, expense becomes a major factor, in construction, cost, and energy cost. These factors make it foreseeable that this section will not be constructed until a later date.

SPACE FURNISHINGS AND EQUIPMENT: The only requirements for furnishings are seating for two-hundred people.

STORAGE: A storage room is required to store large materials such as tables, props, etc. used for the activities. Its exact contents are not known, so the design should be general. A series of smaller storage units are recommended along a portion of one wall to be used for smaller articles.

SPECIAL CONSIDERATIONS: A strategy for the flexability for the space must be considered. If a modular system is to be used, the units must be integrated into the construction system. Units not being used must be stored out of sight, preferably creating a visual effect in the wall system. From the activities indicated an inside/outside relationship should be investigated. The potential of opening up a portion of the exterior wall could enhance the performance of the space. Allowing the activity to expand outside the normal building envelope.
MULTI-PURPOSE SPACE (con't)

SPACE RELATIONSHIPS:

MATERIAL REQUIREMENTS: The floor material is required to be easily maintained and able to resist stains and moisture. It must resist showing traffic patterns or wear spots.
BUILDING CRITERIA

COUNTY REGULATIONS:

The design must conform to all state and county regulations. The county requires that a septic tank permit be obtained from the Department of Health. The septic filter system is regulated by Indiana State Board of Health, Regulation HSE 25-R, residential on-site wastewater disposal. See appendix and for these regulations and sample septic permit. After the septic permit is obtained, the County Planning Commission will issue a building permit. See appendix With the submission of the permit, the architect must supply a set of C0's stating location on the site and total size of the structure. After the structure is completed a visual inspection of the premises must be made by the Planning Commission for final approval.

The design must conform to the minimums set by Huntington County Zoning Ordinances that have been determined by the Board of Commissioners of Huntington County. Specifications C, as follows, dealing with single family dwellings.

SPECIFICATIONS C - RESIDENTIAL USES
SINGLE FAMILY DWELLING

DEFINITION: A detached building designed or occupied by one family exclusively.

LOCATION PERMITTED: In all Districts, except (LI) and "HI", provided it is located:

1. On a lot which was in a single ownership or included in a subdivision recorded in the office of the Recorder of Huntington County, Indiana, on or before the date of passage of this ordinance, or

2. On any lot with a minimum area in square feet and width as follows:

<table>
<thead>
<tr>
<th>DISTRICT</th>
<th>WITHOUT PUBLIC WATER SUPPLY</th>
<th>WITH PUBLIC SUPPLY</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>LOT AREA</td>
<td>LOT WIDTH</td>
</tr>
<tr>
<td>&quot;A1&quot;</td>
<td>15,000</td>
<td>100</td>
</tr>
<tr>
<td>&quot;R1&quot;, &quot;R2&quot;, 10,000</td>
<td>90</td>
<td>7,200</td>
</tr>
<tr>
<td>&quot;LB&quot;, &quot;RB&quot; &amp; &quot;CB&quot;</td>
<td>60</td>
<td>6,000</td>
</tr>
<tr>
<td>&quot;R3&quot; &amp; &quot;R4&quot;</td>
<td>7,200</td>
<td></td>
</tr>
</tbody>
</table>

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HEIGHT OF BUILDINGS:
Principal Building -- Normal maximum 35 feet or 2 1/2 stories.

Conditional Exception - Height of principal building may be increased above 35 feet but not higher than 45 feet or three stories, if two side yards of 15 feet each are provided.

FRONT YARD:
1. On 4-lane Federal and State Highways, a distance of sixty (60) feet.
2. On 2-lane Federal and State Highways, a distance of seventy-five (75) feet.
3. On all other roads and streets except in incorporated areas, a distance of seventy-five (75) feet from the center line of the right-of-way.
4. On streets in incorporated area a distance of twenty-five (25) feet.
5. On Federal and State Highways in the "R3" District a distance of twenty-five (25) feet or as indicated on the Zone Map.

SIDE YARD:
1. The sum of the side yards shall equal not less than 20% of the lot width with a minimum width of 10 feet for either side yard in all but "R3" and "R4" Districts.
2. A minimum width of 5 feet for either side yard in "R3" and "R4" Districts.

REAR YARD: 20% of the depth of the lot, with a minimum depth of 15 feet and need not exceed 25 feet in depth.

GROUND FLOOR AREA: Not less than the following:

<table>
<thead>
<tr>
<th>DISTRICT</th>
<th>GROUND FLOOR AREA</th>
</tr>
</thead>
<tbody>
<tr>
<td>&quot;A1&quot;, &quot;R1&quot;, &quot;R2&quot;</td>
<td>720 sq. ft.</td>
</tr>
<tr>
<td>&quot;R3&quot;, &quot;R4&quot;, &quot;LB&quot;, &quot;RB&quot; &amp; GB&quot;</td>
<td>576 sq. ft.</td>
</tr>
</tbody>
</table>

LOT COVERAGE: 30% maximum on a corner lot; 25% maximum on interior lot.

ACCESSORY BUILDING, USES PERMITTED: Private garage, storage, exclusive of industrial or commercial use.
SERVICE REQUIREMENTS:

SEWAGE SYSTEM: The sewage system size is regulated by the above regulations. This will be sized for a four bedroom house with six occupants. This should be considered as an alternate system. The primary system should be self-sufficient, such as a composting system. This must be cleared by the County Health Department with a written permission.

WATER SUPPLY: The water is to be supplied by a well on site. The well depth in this area is 90'-0" to 120'-0". Methods for drawing water other than conventional means must be investigated.

TELEPHONE: The location and types of telephones are to be coordinated with the telephone company for easy installation of telephone terminals. This must be scheduled into the construction process. Access and location of the nearest cable or line must also be coordinated with the telephone company.

POWER: The alternative energy source to supplement the environmental design of the house is to be electrical power. During times of needs, the purchased power is to be supplemented by site produced power, i.e. wind.

MATERIALS: Materials used for construction must be readily available to the area. This is due to cost only, if materials could be proven to be more economical with shipping and time loss.
ACCESS/EGRESS: There are two alternatives to gain access to the site, either from the more traveled county road 300E or the dead end road 500S. These two alternatives are shown in the site evaluation. The access road itself must be a minimum of 22'-0" wide. Trees and vegetation must be held back from the drive's edge 8'-0". The entrance must be visually recognizable to the passerby or visitor as to distinguish it from other turn-offs. Presently the drive is to be constructed of gravel for construction purposes. After construction the drive can be finished with materials that will control dust, provide a substantial support, and blend with the environment.

PARKING: Parking must be provided for a minimum of six vehicles, however this area should expand for thirty car maximum. The location should be within proximity of the multipurpose and studio space. At the closest point to these two spaces should be a drive up point for pedestrians being delivered. The main parking area must have access to the garage for the residence and will be used by visitors. The parking must conform to the minimum set by the county zoning codes, Specifications F, as follows:

SPECIFICATIONS F - CONTINGENT USES

DEFINITION: Uses which are likely or liable, but not certain, to occur, and which are not inappropriate to the principal use of the District in which located.

LOCATION PERMITTED AND VEHICLE PARKING SPACE REQUIRED:

Contingent uses, as listed herein, are permitted in the District indicated below. Each use shall provide on the lot, or within 300 feet thereof on a site approved by the Board of Zoning Appeals, parking space -- open or enclosed -- as follows:

<table>
<thead>
<tr>
<th>CONTINGENT USE</th>
<th>LOCATION</th>
<th>PARKING SPACES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Boarding or Lodging House</td>
<td>&quot;A1&quot;, &quot;R2&quot;, &quot;R4&quot;</td>
<td>One for each 3 occupants</td>
</tr>
<tr>
<td>Bulletin Board for a Church or Public Building</td>
<td>&quot;LB&quot; &amp; &quot;GB&quot;</td>
<td>All</td>
</tr>
<tr>
<td>Church or Temple</td>
<td>All except &quot;LI&quot; &amp; &quot;HI&quot;</td>
<td>One for each 6 seats in main auditorium</td>
</tr>
</tbody>
</table>
**EXTERIOR CRITERIA (cont'd)**

<table>
<thead>
<tr>
<th>Category</th>
<th>Requirement</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>College or University</td>
<td>All except &quot;LI&quot; &amp; &quot;HI&quot;</td>
<td>One for each 3 students or staff</td>
</tr>
<tr>
<td>Community Center</td>
<td>All</td>
<td>One for each 6 seats</td>
</tr>
<tr>
<td>Farm, Vegetable or Flower Garden or Plant Nursery</td>
<td>All</td>
<td>One additional</td>
</tr>
<tr>
<td>Home Occupation</td>
<td>All</td>
<td>One for each 125 sq. ft. of ground floor area</td>
</tr>
<tr>
<td>Lodge or Private Club (which is of a non-commercial character)</td>
<td>&quot;Al&quot;, &quot;R2&quot;, &quot;R4&quot;, &quot;LB&quot; &amp; &quot;GB&quot;</td>
<td>One for each 6 seats in Chapel</td>
</tr>
<tr>
<td>Mortuary</td>
<td>&quot;Al&quot;, &quot;R2&quot;, &quot;R4&quot;, &quot;LB&quot;, &quot;RB&quot;, &amp; &quot;GB&quot;</td>
<td>One for each 125 sq. ft. or ground floor area</td>
</tr>
<tr>
<td>Municipal or Governmental Bldg. All</td>
<td></td>
<td>One for each 7 persons</td>
</tr>
<tr>
<td>Nursing Home or Homes for Aged Professional Office in Residence</td>
<td>All except &quot;LI&quot; &amp; &quot;HI&quot;</td>
<td>Two additional person</td>
</tr>
<tr>
<td>Public Library or Museum</td>
<td>All</td>
<td>One for each 125 sq. ft. of ground floor area</td>
</tr>
<tr>
<td>Public Park or Public Recreational Facility</td>
<td>All</td>
<td>One for each 3 employees in the building</td>
</tr>
<tr>
<td>Public Utilities Building or All Right-of-Way, including purposes essential to utilities operation, but not including commercial or industrial structures or uses in &quot;R1&quot;, &quot;R2&quot;, &quot;R3&quot;, and &quot;R4&quot; Districts</td>
<td>All</td>
<td></td>
</tr>
<tr>
<td>Railroad Right-of-Way, including All purposes essential to railroad operation, but not including railroad yards, ships, stations, engine storage, commercial or industrial structure or uses, in All &quot;R1&quot;, &quot;R2&quot;, &quot;R3&quot;, &quot;R4&quot; or &quot;LB&quot; Districts</td>
<td>All</td>
<td>Two Additional</td>
</tr>
<tr>
<td>Roadside Stands, for the sale by the producer of agricultural and plant nursery products raised on the premises</td>
<td>All</td>
<td></td>
</tr>
</tbody>
</table>
EXTERIOR CRITERIA (con't)

School, Public or Parochial All except "LI" & "HI" One for each 3 members of the staff plus one for each 6 seats in auditorium and gymnasium

Tourist Home "A1", "R2", "R4", "LB", & "GB" One for each sleeping room

Temporary Sign, pertaining to lease, hire or sale of a building or premises All

GENERAL PROVISION

PAVING: Open Parking area shall be paved with a dustproof or hard surface meeting the Standard Specifications of the County.

CONDITIONAL EXCEPTIONS

PARKING REQUIREMENTS: A Church or Temple requiring parking area at time when nearby uses do not need their parking facilities, may, by agreement approved by the Board of Zoning Appeals, utilize such facilities in lieu of providing their own parking facilities.

HEIGHT PERMITTED:

DISTRICT NORMAL MAXIMUM HEIGHT
"LI", "R1", "R2", "R3" & "R4" 35 feet or 2 1/2 stories
"LB" 45 feet or four stories
"RB", "GB", "LI" & "HI" 60 feet or five stories

1. Buildings may be erected to heights in excess of the Normal Maximum, if they are set back from required front, side, and rear yard lines, or property lines where yards are not required, as follows:

DISTRICT SETBACK
"A1", "R1", "R2", "R3" & "R4" One foot for each foot of additional height
"LB", "RB", "GB", "LI" & "HI" One foot for each two feet of additional height

2. In all Districts, spires, church steeples, chimneys, cooling towers, elevator bulkheads, fire towers, scenery lofts, water towers, transmission towers, and other essential mechanical appurtenances may be erected to any height not prohibited by other laws or ordinances.

THE PROVISIONS FOR YARDS, VISION CLEARANCE, AND ACCESSORY BUILDINGS AS THEY PERTAIN TO GROUP HOUSES IN RESIDENTIAL DISTRICTS, LOCAL BUSINESS Uses IN "LB", "RB", "LI" OR "HI" DISTRICTS, OR GENERAL BUSINESS USES IN "GB" DISTRICTS, SHALL APPLY TO CONTINGENT USES LISTED HEREIN.
EXTerior CRITERIA (cont')

PARKING: (cont')

The parking area must be able to support other functions
than parking and circulation. To maximize the efficiency
of space use see "Landscaping".

LANDSCAPING: Consideration of the existing landscape and micro
environment are of the utmost importance. The natural
balance of the environment on this site must be main-
tained. This requires designing the house into the
landscape, not designing the landscape to accent the
design. To the south of the wooded portion of the site,
additional landscaping will be required. This area
is now farm land. If any larger vegetation for this
areas is to be purchased, they should be located and
planted as soon as possible. Open space for activities
or parking should be multi-functioning limiting necessary
un-natural open spaces.

RECREATION: A exterior area for outside recreation must be provided.
These activities will include active sports such as;
frisbee, catch (baseball and football), and volleyball.
This area must provide a large unobstructed space
where a degree of safety can be maintained. A continuation
of this space used for entertainment connecting with
the Patio, should be considered. This space should be
denoted by a texture change, not necessarily grass.
building types analysis
The design of the house has long dealt with environmental problems inherent to the site. This has been done out of necessity, because of the lack of technology and/or energy. For the purpose of this study the building types will be divided into three periods: A) Pre-technology, B) Technology, C) and Post-technology. The first period, housing was constructed to take advantage of environmental considerations, inherent to the site. The house style had been pasted and evolved from generation to generation along with the technology for construction. The function of these houses, is to provide protection and comfort from the environmental elements. The reason for this attitude was due to the styling pasted along, and more importantly the unavailability of technological advancements; and with each the house has changed to accommodate these new machines and the change in living styles they caused. This leads into the second period where technology and energy has become so available that people only consider what they want, with relation to what they have seen. With our variety of communication media people are exposed to housing styles from all over the world. Since being exposed people see a style they like, not considering if it will function properly on the site, and build it. By not understanding or not caring people are flagrantly wasting energy that has been available. We are now shifting out of this state of thought into the final period, where we are attempting to integrate the present technology with the environmental design considerations of the past. People are becoming more and more concerned with this, because of the increasing cost of energy; there by creating the necessity for climatic consideration into the design process.

PRE-TECHNOLOGY:

Gunston Hall- Fairfax County, Virginia 1758

COMMENTS: The Gunston Hall is Georgian style, very simply arranged, yet formal. It is in an environment that has cold winters and hot summers. There are four rooms arranged off of a through corridor, each containing a fireplace. The fireplace is on the interior of the outside wall for maximum heat gain. This also creates a draw through the house that can be regulated. In the summer the corridor can be opened to allow through ventilation creating air circulation.
BUILDING TYPES ANALYSIS (con't)

PLAN:

ISOMETRIC:

ENVIRONMENTAL:

- Summer Ventilation
- Winter Heating
Short House - Newburg, Massachusetts 1733

COMMENTS: The Short House functions on the same environmental principles as the Gunston Hall, with exterior wall fireplaces and a central corridor for ventilation. The plan itself is much more complex in the layout and function. The main circulation is a corridor through the central block. Off this corridor are the rooms necessary for public entertainment. Each of these rooms contain a fireplace as a source of heat. A lower section was added to the west at a later date. Access to this new section is through the existing dining room, then from room to room.

(For environmental diagram refer to the Gunston Hall)
BUILDING TYPES ANALYSIS (con't)

SOUTH ELEVATION:

CIRCULATION:

ZONING:

GARDEN

Patio

PUBLIC

PRIVATE
The Old Collins House - Gloucester, Massachusetts 1740

COMMENTS: The Collins House is composed of a square block with rooms organized around a centralized fireplace. The fireplace being centrally located allows heat to be radiated to all the surrounding rooms, not allowing heat to be wasted through an outside wall. This also creates a convective cycle inside the house in the summer time to help cool. The circulation is linear from room to room; by today's standards this is undesirable. Access to outside spaces such as the patio or the garden are allowed through the entertaining spaces to the south and east.
BUILDING TYPES ANALYSIS (con't)

NORTH ELEVATION:

CIRCULATION:

ZONING:

PATIO

PUBLIC

PRIVATE

GAR.

PRIVATE
BUILDING TYPES ANALYSIS (cont)

ENVIRONMENTAL:

SUMMER VENTILATION

WINTER HEATING
TECHNOLOGY:

Wolf Residence - Toronto, Ontario  Arch.: Barton Myers

COMMENTS: Myers interweaves a industrial design style into the design of this house, with little or no energy concern. The winters in this area are very cold, yet a large portion of the exterior wall is composed of glass. This glass requires a large amount of heating to prevent infiltration and condensation. The whole structure is raised off the ground on columns allowing cold air to circulate under the floor, causing cold floors. The plan itself is open and very simple. The circulation is equally simple being one linear path along one outside wall.
BUILDING TYPES ANALYSIS (con't)

PLANS:

SECOND FLOOR

FIRST FLOOR

CIRCULATION:

ZONING:

PRIVATE ABOVE

PUBLIC BELOW

PRIVATE BELOW
BUILDING TYPES ANALYSIS (con't)

ENVIROMENTAL:

- Heating Unit
  - Transmission

(Floor is source of cold transmission)

EXTERIOR:
Berkowitz Residence - Lake Mahopac, New York Arch.: Norman Jaffe

COMMENTS: There are five units or pavilions forming the structure, that are connected by a mechanical spine. There is very little consideration for energy conservation with the major expanse of glass to the north, and the added exterior wall caused by the separation of the units. The heating system uses hot water heated by a oil fired unit. Circulation is from room to room by small corridors. This gives a large amount of flexibility to stop circulation and change the function of the room.

ISOMETRIC:
BUILDING TYPES ANALYSIS (con't)

PLAN:

CIRCULATION:

ZONING:
BUILDING TYPES ANALYSIS (cont)

ENVIRONMENTAL:

![Diagram of building layout]

EXTERIOR:

![Image of exterior view of building]
BUILDING TYPES ANALYSIS (cont')

Average House- Anywhere, U.S.A.

COMMENTS: The houses in this section have all been custom designed houses, but the majority of people live in houses similar to this. The houses are layed out by contractors, developers, or the occupants themselves. This particular house was designed by a small developer/contractor. These are the biggest wasters of energy today. The plan is chosen from a catalogue and placed on the site however it will fit; the construction technic or the internal organization very rarely changes from site to site. The total heating requirement must be carried by the mechanical system. As for the plan the house is not cleanly designed, the circulation is interrupted with no clear path.

(For a detailed study of energy loss of average houses see,"Living Conditions")
POST-TECHNOLOGY:

Hilltop House- Central Florida Arch.: William Morgan

COMMENTS: The Hilltop House is a underground house a new type of living style. William Morgan specializes in this type of structures, which is now becoming very practical. The principle of the design is to take advantage of the insulative qualities of the earth. The berms not only insulate but project winds over the structure, instead of hitting a vertical surface. Being underground presents several problems such as the psychological factors of living underground, water seepage, and allowing natural light in. Through Morgan's study his design has evolved from dealing with these problems. The plan is very simple radiating from a central core at the entrance.

EXTERIOR:
BUILDING TYPES ANALYSIS (con't)

CIRCULATION:

ZONING:

PRIVATE

PUBLIC

PRIVATE

PUBLIC

OUTSIDE STORAGE
**Crowther House - Denver, Co. Arch.: Richard Crowther**

**COMMENTS:** This house is designed by and for Richard Crowther. Crowther has experimented with regulating energy consumption for the past 40 years. The house full fills the functions of a house, office, and research lab. 2400 sq. ft. is for the primary residence, 1000 sq. ft. for the library, solar test deck and home office, 1000 sq. ft. caretaker's apartment with greenhouse, 1000 sq. ft. indoor swimming pool, and 1000 sq. ft. educational, recreational and guest quarters. The form is influenced by a large solar heated gallery and the cellular nature of the plan to enable thermally insolate parts of the house. The key thermal zone is the central gallery centralizing the location of heated air. This house is designed form the inside out as are most of Crowther's other houses. Spaces requiring light are located to the south and west, and earth berms are placed on the north exposure as protection against winter winds. Crowther designs considering all the basic elements as well as the usual considerations.
BUILDING TYPES ANALYSIS (con't)

PLANS:

MAIN LEVEL

LOWER LEVEL

SECTION:

BUILDING SECTION THRU GALLERY
SITE EVALUATION
SITE LOCATION

LOCATION:

[Map showing cities in Indiana with location points for Gary, South Bend, Fort Wayne, Huntington, Lafayette, Marion, Muncie, Indianapolis, and Evansville.]
HUNTINGTON COUNTY:
SITE LOCATION

ROCK CREEK TOWNSHIP PLOT PLAN:

[Map of Rock Creek Township with grid and landmarks]
SITE LOCATION (cont'd)

U.S.G.S. MAP:

[Map showing geographic features and locations, including Rock Creek Center, Yankeetown, and经纬度坐标。地图比例尺为1:24,000，等高线间隔10英尺，基准面为平均海平面。]
AERIAL VIEW:
SITE LOCATION

LOCATION RELATIONSHIP:

- Warsaw
- Fort Wayne
- Huntington
- Markle
- Decater
- Bluffton
- Warren
- Marion
- Muncie

Indiansapolis 150 m.