AN ORPHAN'S HOME

for

GREAT FALLS, MONTANA

Part I

Undergraduate Thesis in Architectural Design

by

KENNETH G. DENNING

Submitted to the School of Architecture as partial fullfillment of the requirements for the degree Bachelor of Architecture

at

MONTANA STATE UNIVERSITY

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It is the intent of this portion of my Architectural Thesis to analyze a proposed architectural project. This thesis consists of the research and preliminary concept involved in the design of a replacement for the present Saint Thomas Orphans' Home in Great Falls, Montana.

This paper consists of a study of the conditions creating a need for a new orphans' home, the local conditions, the functions of the building, aesthetic considerations, and economic considerations as a preliminary program to the actual design of this project next quarter as my Architectural Thesis.
TABLE OF CONTENTS
# TABLE OF CONTENTS

<table>
<thead>
<tr>
<th>Conditions Creating A Need</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Local Conditions</strong></td>
<td></td>
</tr>
<tr>
<td>Geographic</td>
<td>13</td>
</tr>
<tr>
<td>Transportation</td>
<td>13</td>
</tr>
<tr>
<td>Education</td>
<td>14</td>
</tr>
<tr>
<td>Climate</td>
<td>14</td>
</tr>
<tr>
<td><strong>Site Conditions</strong></td>
<td></td>
</tr>
<tr>
<td>General</td>
<td>18</td>
</tr>
<tr>
<td>Views</td>
<td>18</td>
</tr>
<tr>
<td>Soil Conditions</td>
<td>19</td>
</tr>
<tr>
<td>Utilities</td>
<td>20</td>
</tr>
<tr>
<td>Traffic Problems</td>
<td>20</td>
</tr>
<tr>
<td><strong>Functions Of The Building</strong></td>
<td>24</td>
</tr>
<tr>
<td><strong>Aesthetic Considerations</strong></td>
<td>30</td>
</tr>
<tr>
<td><strong>Economic Considerations</strong></td>
<td>33</td>
</tr>
<tr>
<td>Footnotes</td>
<td>36</td>
</tr>
<tr>
<td>Bibliography</td>
<td>38</td>
</tr>
</tbody>
</table>
LIST OF TABLES AND FIGURES
LIST OF TABLES AND FIGURES

<table>
<thead>
<tr>
<th>Table/Figure Description</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of Children in Saint Thomas Orphans' Home</td>
<td>3</td>
</tr>
<tr>
<td>Older Boys' Bedroom</td>
<td>4</td>
</tr>
<tr>
<td>Older Girls' Bedroom</td>
<td>4</td>
</tr>
<tr>
<td>Little Girls' Bedroom</td>
<td>6</td>
</tr>
<tr>
<td>Little Boys' Building</td>
<td>6</td>
</tr>
<tr>
<td>Weather of Great Falls</td>
<td>16</td>
</tr>
<tr>
<td>Weather of Great Falls</td>
<td>17</td>
</tr>
<tr>
<td>Map of Great Falls</td>
<td>21</td>
</tr>
<tr>
<td>Plot Plan of Saint Thomas Orphans' Home</td>
<td>21a</td>
</tr>
</tbody>
</table>
LIST OF PHOTOGRAPHS
<table>
<thead>
<tr>
<th>Description</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>View of Entrance (North Elevation)</td>
<td>10-1</td>
</tr>
<tr>
<td>Close View of Side Entrance</td>
<td>10-2</td>
</tr>
<tr>
<td>West Elevation</td>
<td>10-3</td>
</tr>
<tr>
<td>West Corner of South Elevation</td>
<td>11-1</td>
</tr>
<tr>
<td>South Elevation</td>
<td>11-2</td>
</tr>
<tr>
<td>South Entrance to Little Boys' Building</td>
<td>11-3</td>
</tr>
<tr>
<td>North Elevation of Little Boys' Building</td>
<td>11-4</td>
</tr>
<tr>
<td>Area Between Little Boys' Building and Main Building</td>
<td>12-1</td>
</tr>
<tr>
<td>Close-up of 12-1</td>
<td>12-2</td>
</tr>
<tr>
<td>Southeast Corner of Building</td>
<td>12-3</td>
</tr>
<tr>
<td>Northeast Corner of Building</td>
<td>12-4</td>
</tr>
<tr>
<td>View to South From Second Story Window</td>
<td>22-1</td>
</tr>
<tr>
<td>View of Site From Southwest Corner</td>
<td>22-2</td>
</tr>
<tr>
<td>View of Site From South Center</td>
<td>22-3</td>
</tr>
<tr>
<td>View of Site From Southeast Corner</td>
<td>22-4</td>
</tr>
<tr>
<td>View of Site From East Center</td>
<td>23-1</td>
</tr>
<tr>
<td>Close-up of 23-1</td>
<td>23-2</td>
</tr>
<tr>
<td>View of Site From North Corner</td>
<td>23-3</td>
</tr>
<tr>
<td>of Eastside</td>
<td></td>
</tr>
<tr>
<td>View of Site From Northeast Corner</td>
<td>24-4</td>
</tr>
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<td></td>
</tr>
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</table>
CONDITIONS CREATING A NEED
When I first went to Saint Thomas Orphan's Home in Great Falls, I entered through the wrong door. It opened onto a landing midway between the first and second floors, and I was not sure whether to go up or down. Because the hall at the bottom was quite dark, and because the many pipes along the ceiling gave it the appearance of an unused basement, I went up first. The hall at the top of the stairs was also poorly lit, and as I walked down the hall, the creaking floor and the closed doors on either side made me decide to look elsewhere for the office. So I went downstairs. An open door at the far end of the hall shared its light with the long hall. I passed a room filled with old clothes, and another with rows of small wooden tables—obviously the dining room. Then I could make out the cooks' uniforms and the stainless steel of the kitchen and realized I had come the wrong way. Feeling like an intruder, I retraced my steps to the second floor.

Finally I came to a room in which a Sister was sitting. I asked her how to find the office, and she directed me to the far end of the second floor hall. There I met Sister Lucy, who told me some of the details of the Home.
She then arranged for one of the children to show me through the building.

The building was constructed in 1910 and is a three-story structure with twenty-five rather steep steps between floors. Much of the building is not used, since originally all the children attended school there as well as living there. They now attend eight different schools throughout the city.

The parts of the building now being used are often over-crowded due to the number of children. They are split into four almost equal groups; the boys age three through fourth grade, the girls age three through fourth grade, the boys fifth grade through junior high, and the girls fifth grade through high school. (See Table 1)

The older boys have a fairly large room. Their beds are arranged military barracks fashion. Partitions allow for a TV-room and a room for the supervising Sister. The Sister's room has windows, with Venetion blinds, that open onto the boys' room. The boys were all outside playing when I went through the building, but as there were only three children in the playground, I don't know where they were playing. (See Fig. 1)

The older girls' room is much more crowded, since each bed has a curtain which can be pulled around it for
<table>
<thead>
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<th></th>
<th>BOYS</th>
<th>GIRLS</th>
<th>TOTALS</th>
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<tr>
<td>Age three thru fourth grade</td>
<td>17</td>
<td>19</td>
<td>36</td>
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<tr>
<td>Fifth grade thru high school</td>
<td>18</td>
<td>21</td>
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<tr>
<td>Totals</td>
<td>35</td>
<td>40</td>
<td>75</td>
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</table>

Number of children in Saint Thomas Orphans' Home

TABLE 1
Older Girls' Bedroom
Figure 2

Older Boys' Bedroom
Figure 1
privacy. Their TV area is just off to one side of the room—not separated by a partition. The girls were watching TV or listening to records when I was there. A Sister was in the area with them. The older girls also had a separate recreation room on the same floor but none of them was using it. (See Fig. 2)

The rooms already mentioned plus a study room make up the third floor. The study room is about eight feet wide and thirty feet long. Along both walls are small wooden doors to storage space (coats, books, etc.) and in the room are two cardtables with three chairs each at which the children could study. There is also a study room on the second floor but this was locked while I was there.

The smaller girls are on the second floor and have even less space than the older girls. They have a fairly large playroom which was empty. While I was there they were playing in a smaller adjoining room. This little room opens onto a porch which has doors to both the outside and to the bedroom. Their bedroom is very crowded, with the beds placed end-to-end, with just one aisle. The supervising Sister, again, had a room in one corner. The bathroom seemed rather inadequate with only one toilet, one sink, and one bathtub. (See Fig. 3)
Sister's Room
Bathroom
Little Girls' Bedroom

Figure 3

Coats and Books
Recration Room
Stairway to Upper floor
Bedroom

TV Room
Bathroom
Storage

Little Boys' Building

Figure 4
Other rooms on the second floor include a music room (which was locked), an art room (locked), and the study room mentioned earlier (locked), and four rooms that are rented to Operation Head Start as a day nursery. (These rooms had previously served as classrooms.)

The little boys are in a separate two-story building about fifty feet from the main structure. They occupy only the first floor. The second floor is occupied by the women who work in the orphanage but are not Sisters. The boys have a TV-room, a room with an exterior entrance and space for books and coats, a recreation room which is simply an empty room, the bathroom and their bedroom. I only had a chance to glance at the bedroom. When I closed the door I noticed it had a bolt latch on the outside and that the door opened in. In an emergency, if the door were locked, it would be almost impossible for the boys to force the door open. (See Fig. 4)

The first floor of the main structure has the dining room, the room with old clothes, several locked rooms, a recreation room for the older boys (which was a large empty room with a TV and a few books and magazines), a small auditorium which served as a TV-room for the Sisters, the kitchen, and the food storage room.
This last is a barren space with concrete walls, wooden rafters for a ceiling, rough wood shelves, and lit by a single bare bulb in the middle of the room. It was quite cold, and was kept from freezing by a small electric heater sitting on a wooden box in the center of the floor, plugged into the light socket. The room by itself was a utilitarian space, but the heater was an obvious fire hazard that could be avoided.

The thing that bothered me most about the orphanage was the overcrowded conditions coupled with the unused spaces. The high ceilings were unnecessary, and the twenty-five steps between floors put the children on the third floor excessively far from the ground in case of any emergency. The only spaces large enough to justify the fourteen feet ceilings were on the third floor.

The long, dark corridors made the place feel spooky. One of the Sisters explained to me that they often have to keep the lights off in the halls and in the other little used spaces to keep the utility bill down.

From the outside the building is very bleak and dreary looking, the front entrance is obscured by trees. Only about one-third of the space available is used for the orphanage. A small area is fenced off for the girls'
playground, and a larger one for the boys' playground. Two of the four city blocks that the orphanage owns are rented to the city recreation league as baseball diamonds. Almost another whole block is unused, unkept land, of which half is covered with trees. In the center of the other half is a swimming pool. It leaks, and is in a poor state of repair, and therefore it is no longer used. It is surrounded by a woven-wire fence topped with barbed wire.

From these data I feel it is reasonably evident that there is a need for a new orphanage to replace the old one.

The present orphanage is kept up by the Sisters of Charity of Providence, with help from the local Community Chest, local welfare agencies, relatives of children in the orphanage, and by private donations. I hope that these sources would be able to raise sufficient funds to construct the new orphanage I propose to design.
1. View of Entrance (North Elevation)

2. Close View of Side Entrance

3. West Elevation
1. West Corner of South Elevation

2. South Elevation

3. South Entrance of Little Boys' Building

4. North Elevation of Little Boys's Building
1. Area Between Little Boys' Building and Main Building

2. Close-up of 12-1

3. Southeast Corner of Building

4. Northeast Corner of Building
LOCAL CONDITIONS

Geographic

Saint Thomas Orphan's Home is located in Great Falls, Montana's largest city. Great Falls is situated astride the Missouri River at its junction with the Sun River, at latitude 47°29' N and longitude 111°21' W. The approximate elevation of the city is 3333 feet. The city is circled by mountain ranges on all sides except the north and northeast. The distance to these mountains is about 30 miles to the east and south, 40 miles to the southwest, and from 60 to 100 miles to the west and northwest.

Transportation

Great Falls is one of the most centrally located cities in Montana. This, besides the fact that it is one of the major cities in the state, makes it an ideal location for an orphanage. This is especially true considering the fact, that a majority of the children now in the institution have one parent, or, least aunts and uncles living in the state. Many of these children live with their relatives during the summer months.

Several main highways radiate from Great Falls, namely Interstate 15, U.S. 87 and 89 and State 20. There are also
four scheduled airlines, four bus lines, and one railroad with passenger service. By these means, there is reasonably direct access to anywhere in the state.

**Education**

The children in the orphanage attend school in eight different schools in the Great Falls public and private systems. The city public school system has twenty-one elementary schools, three junior highs and two high schools. The private system includes seven elementary parochial schools and one parochial high school.

The Great Falls school systems are among the best in the state and nation. Students from both grade and high schools have received excellent scores in national testing.

**Climate**

Great Falls and the surrounding area is known for the very rapid temperature changes that are prevalent. During the winter months, moving masses of cold air from Canada often cause sharp temperature drops. The temperature may drop from above freezing to below zero in twenty-four hours. The opposite may also occur. "Chinook" winds, which are quite common in Great Falls, may cause a 40-degree
temperature rise in twenty-four hours.

Winters are not as cold as would be expected of such a northern location largely due to the effects of the "chinook" winds. The average temperature during the winter months is 23.6°F. Sub-zero weather is usually experienced several times during the winter, but the coldest weather seldom lasts more than a few days at a time. Because of the recurring "chinook" winds throughout the winter season, snow lies on the ground for only a few days at a time.

Summertime in the area is generally pleasant with cool nights and warm sunny days. The average temperature is 69°F. Freezing temperatures do not occur in July or August, very seldom in June and usually only two or three days in May and September. Frost occurs frequently from October through April.

Great Falls' average annual precipitation is 14.03" and about 70% of this (nearly 10 inches) falls during the months from April through September. Most summer precipitation occurs in showers or thunderstorms. During late fall, winter and early spring, most precipitation is in the form of snow.

The city receives 64% of the possible sunshine, but the short winter days do not give many daylight hours.
WEATHER

The following facts about the Great Falls weather are from:
Weather Bureau, U.S. Department of Commerce,
No. 60-24.

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Table II
SITE CONDITIONS

General

The present site of Saint Thomas Orphans’ Home occupies four city blocks—from Central Avenue to Second Avenue South, and from Thirty-second Street to Thirty-fourth Street—an area nearly 800 feet square. The present buildings occupy only about the northwest quarter of the land. Most of the quarter is planted with grass and elm trees. There are also elm trees and grass on the boulevard along Central Avenue. The south half of the site is bare dirt and gravel. At the present time it is being leased to the city as two little league baseball diamonds.

Views

The site is basically flat with a gentle slope to the northwest. One can see for miles to the east and south, but the only real view is the mountains, which are about thirty miles away in both directions. To the north, the distant views are completely blocked, mostly by the large trees planted along the city boulevard, and finally by closely-spaced, old, two-story residences.

In the summer and fall, however, these large, old trees comprise one of the more pleasant elements of the
environment, and help to make this one of the nicer areas of town. To the west, the ground drops off gently, and the trees and a few, old one-story residences effectively stop the view.

The site, which was originally in the country, is now in a residential district. Most of the houses in the area are quite conventional in appearance, and most of them are one or two-story, middle-class dwellings. Because of the fairly flat lay of the land, only the first row of houses is visible.

**Soil Conditions**

The soil conditions in the area occupied by the present Home are quite favorable. There is bedrock within five feet of the ground surface. This bedrock is of the Kootenai formation, and is made up of thin bedded, jointed, alternating layers of siltstone and colystone. It is very competent stratum with an allowable load bearing capacity, at one foot of penetration, of 14,000 pounds per square foot. It can be excavated by backhoe type equipment without blasting.
Utilities

Since this is a residential district all utilities are readily available. Water, gas, and sewer mains run under both Central Avenue and Second Avenue South.

Traffic Problems

Although Central Avenue once was the main street of Great Falls, (and still is in the business district) the through traffic has shifted to First and Second Avenues North—which are both one-way streets—and to Tenth Avenue South (U.S. Highway 91), the busiest street in Montana. Nearby Thirty-eighth Street is the main north-south arterial for this part of town. None of the streets bounding the site are major traffic streets, but there is easy access to any part of the city.
Figure 6

MAP OF GREAT FALLS, MONTANA

THE MOUNTAIN STATES TEL. & TEL. COMPANY

THE SITE

MALMSTROM AIR FORCE BASE

FAIR CROUNOS

10 th st.

FAIR GROUNDS

GREAT FALLS INTERNATIONAL AIRPORT
Figure 7

PLOT PLAN

Sanitary Sewer

Storm Sewer

St. Thomas Orphans' Home

Cottage
Storage
Gym
Garage

21a
1. View to South From Second Story Window

2. View of Site From Southwest Corner

3. View of Site From South Center

4. View of Site From Southeast Corner
FUNCTIONS OF THE BUILDING
FUNCTIONS OF THE BUILDING

Most of the children in Saint Thomas Orphans' Home are not orphans; most of them have two parents, but come from homes which have been broken because of personal problems, alcoholism, mental illness, or poverty. Some of the children have been taken from their families by local welfare agencies because they felt that the children's homes were not suitable for one reason or another. Because of this, many of the children are not felt suitable for placement in foster homes. Saint Thomas Orphans' Home is more of a boarding school than an orphanage. For this reason, it must provide a suitable environment for these children to develop into normally adjusted, socially acceptable adults.

Note: Much of the following information on the function of an orphanage was taken from a personal letter dated January 26, 1968, from V.J.R. Mills, Director of Internal Operations, Christian Children's Fund.

The concept of child-care institutions dating from the Victorian era has been the dormitory with communal kitchen, communal dining room, etc. In more modern times, child-care institutions have gone to the cottage-plan.
system which has been pioneered by the British in Europe and Japan in the Far East.

In each cottage there are accommodations (usually) for eight or sometimes nine children, and the cottage mother or (preferably) parents. Usually, there is a suite of rooms attached to the cottage for the cottage parents or mother, which consists of a bedroom, sitting–dining room and a kitchen.

The family (the children) require bedrooms with adequate space (this requirement is set by state law—a minimum of 500 cubic feet per child), adequate cupboard and drawer space, and connecting bathrooms. Some cottages have two in a bedroom and others have three. Three seems to be preferrable, since this often forestalls some of the behavior problems of children coming into puberty. (Robert O. Wix)

For the care of the sick children isolation rooms should be provided, preferably easily accessible to the houseparents' bedroom and fairly isolated from the other children's bedrooms.

An institution, of course, could have as many cottages as necessary to supply the demand for such housing. Some institutions have a communal kitchen and and dining hall where the children all come together for meals, but
this is not very good psychologically. It is much better for each cottage to have its own kitchen and for the cottage mother to prepare the type of food that her children enjoy. Food goes a long way in gaining the cooperation and goodwill of a child. Many institutions require that the children help with the work—wash dishes, clean their rooms and scrub floors—and take care of other chores around the home. In order to encourage the boys and girls to do this, the cottage mother will often tell them that if they do their work well, she will prepare certain well-liked foods for dinner. The children hurriedly go about getting their work done, looking forward to the spaghetti dinner, or whatever it might be, as a reward for services rendered.

In such a grouping of cottages, there should be varying floor plans and different color schemes so that the cottages do not look just alike. This creates the feeling of "our home" is different from yours and gives the children a feeling of possessiveness and encourages them to take pride in their own cottage. Often a little competition is promoted between the various families in the cottages by having them plant flower and/or vegetable gardens. The cottage that has the best garden is rewarded for it. It is very necessary that the children be given a real home atmosphere to help them develop a feeling of security.
This is especially true since many of these children have emotional problems.

Besides the cottages, there should be an administration building. This building would have an office for the superintendent, offices for the necessary case workers, and a business office to take care of the routine matters of the institution. It should also have a conference room where the superintendent, the cottage staff, and other personnel could get together for discussions. This building would perhaps be the location for a central heating system and a central laundry-utility area.

There should be ample outdoor play areas, so that the children would be encouraged to get plenty of exercise, and learn to cooperate and get along with others. For the northern and rather cold winter climate of Montana, it would be good to have play areas within each cottage as well as a large, central, recreation and hobby area.

Since this orphans' home is run by a religious order, since the Sisters will be living in the institution, and since religion is often very important to the development of children, it would be very desirable to have a small chapel (located in the administration complex or else in its own area). The children could be encouraged to use the chapel but those of the Protestant faith would
be allowed to attend their churches in the city.

Schooling for the children will be provided in the same manner as it is in the present Saint Thomas Orphans' Home. The children attend schools of the Great Falls school systems.

Note: the following section has been taken directly from the "Minimum Requirements of Physical Standards of Child Caring Institutions", from the state of Montana, Department of Public Welfare.

Sanitation and Fire Protection:

a. Compliance with recommendations of the State Board of Health following inspection made by a representative of that department in regard to water supply, sewage disposal, milk certifications, dish washing, plumbing, screening, food handling, air space, lighting, and general condition of the building.

b. Compliance with recommendations of the Livestock Sanitary Board following cattle and dairy inspection.

c. Compliance with recommendations of the State Fire Marshall following inspection made by a representative of that department.

Facilities:

a. Sleeping Accomodations: A bed for each child, with a level springs and mattress, is a requirement, together with sufficient washable covering. Linens must be changed at least once a week. Rubber sheeting must be used on beds of all children less than three, and all those who are enuretic. The mattress should be of adequate length. In sleeping rooms, there must be at least 500 cubic
feet of air space for each child. Beds must be 3 feet apart at the sides at least.

b. Toilet and bathroom: Toilet and bath facilities shall conform to standards set by the State Board of Health. Each child shall have his own towel, wash cloth, toothbrush, comb, and other toilet articles. These should be kept clearly marked for him. There should be space for drying towels and wash clothes quickly. Towels and wash clothes shall be changed at least twice a week.

c. Closets and dressers: Each child shall have a place for his own clothes and personal belongings, easily accessible to the child. In addition there shall be available adequate storage space for clothing and belongings not currently in use.

d. Play equipment and materials: There must be an adequate supply for constructive recreation programs, particularly for days when children cannot play outdoors. There should be available play space and equipment for both indoors and outdoors.

e. A comfortable place for children to visit in private with parents shall be provided.

f. Isolation Facilities: Every institution shall have an isolation room (800 cubic feet of air space per child) with toilet and lavatories for use of patients only.

There shall be proper disinfection or sterilization of rooms and of equipment following contagious or infectious illness.

Children admitted to the institution shall not be routinely isolated for a specific period. If the medical examination, or the social history indicates the necessity of keeping a child separate from other children in the institution, disposition shall be decided on an individual basis.
AESTHETIC CONSIDERATIONS

The present Saint Thomas Orphans' Home is located in a residential area. It is an older middle class, fairly well-kept section of Great Falls, and seems to me to be an ideal location for an institution of this sort. This is after all, supposed to be the home for the children who live in it, and for this reason it should be as much like a normal home environment as is possible and practical. Institutions are moving away from the cold, antiseptic feeling and are creating a warm, hopeful, personal and good-humored atmosphere which has unique treatment values of its own.  

For the purposes of defining the mood or character of the buildings, they may be divided into two distinct and separate classifications: the administrative section and that section in which the children are to live. (I have come to the conclusion that a single, all encompassing building which is strictly institutional in nature, such as the existing structure, is not a suitable substitute for the normal home environment that the institution is attempting to replace.)

The administrative section should have a mood or character that is expressive of its nature as an
institutional building. It should appear dignified, and should have a feeling of stability that would reflect its intentions of being a servant to society. It should convey a feeling of strength and security and perhaps even protection to the surrounding complex of buildings, and to the children living in them. The administrative building(s) would include offices for the necessary case workers, an office for the superintendent, a business office and a conference room. It would also be the location of the central heating system for the whole complex, and a central laundry-utility area, and a central assembly-recreation facility.

The section in which the children are to live should have a residential character. This will be the children's home, and the natural first step to help the children to adjust to their new home would be to make it look like a home. They should fit in with the residences that surround the site, so that they do not call undue attention to themselves. This is desirable both to give the children a sense of belonging and to foster a feeling of good will with the community.

How to achieve the desired atmosphere is an important consideration. The administration building should be a
rather formal and conservative building with a prominent location. It would be the institution's formal link with the community, and as such must maintain an air of dignity. Various ways of accomplishing this include: the use of symmetry; the use of a large monolithic structure; and the use of traditionally durable materials such as brick, stone, concrete, steel, etc.

The buildings in which the children are to live should have a more free feeling about them—as opposed to the rigidity or symmetry of the administrative building. They should employ a greater use of color and a use of more exciting or extreme shapes and colors.

As to the good will of the community, it is very important that the complex not be so extreme that the people of the community have the feeling that "I wish I could have all these advantages for my children", nor should the facilities be so inferior that the town's people pity the children. The ideal situation would be to have people think "I am glad that these children have these advantages and if anything happened to me, and my children had to go to this institution, I would feel that they were being well cared for."

32
ECONOMIC CONSIDERATIONS
ECONOMIC CONSIDERATIONS

There are three fundamentals to consider in any discussion of economics. These three interacting fundamentals are size, quality, and cost. Size and quality determine the cost, but it must be realized that cost is a complex term. Cost includes not only the initial sum, but also the long range factors of maintenance, repairs, and operation. For an institution such as this orphans' home, any consideration of cost must be based on over-all long-term expenses. A very low initial cost may lead to high maintenance and operating costs, and may actually cost more in the long run than would be the case with a high initial cost, and successively lower maintenance and operating costs.

For cost estimate purposes, the buildings in this project may be divided into two separate functional types: administrative and residential. I consulted Marshall St Stevens Valuation Services to find the normal price range of buildings of these types. No buildings exactly like the administrative buildings of the home were listed, but I assumed that this would be very similar to the building type listed as "office building". These figures ranged from $11.90 to $24.21 per square foot. The prices
given for residential building types ranged from $5.95 for 
"cheap" to $19.45 per square foot for "excellent". My 
building cost will not be at the extremes represented by 
these figures, although it will probably come closer to 
the higher figures since I will be taking into account the 
long-term cost of the buildings. It will not, however, 
by any means be in the class of luxury accommodations, for 
rather obvious reasons stated in the previous chapter.

For the purpose of making a rough estimate, I shall 
assume that the administrative building shall cost approxi­
mately $20.00 per square foot, and the residential build­
ings approximately $17.00 per square foot. From informa­
tion taken from the following sources: The Baptist Child­
ren's Homes of North Carolina, Inc. and material from 
the Montana Department of Public Welfare; and from my own 
ideas, I am assuming that the residential buildings will 
total approximately 16,800 square feet. The administra­
tive building (which will include the offices, a chapel, 
a gymnasium and general recreation area, a central heating 
plant, a laundry, and other related functions) will include 
approximately 5000 square feet. This would set a rough 
estimate for the residence at about $285,000. With the 
approximate cost of the administrative building at $100,000, 
the approximate total cost would be $385,600.
The site is nearly level and does not present any special problems that would greatly affect the cost of construction. The development of play areas and the planting of trees need not be included in the original contract. Much of this work could be done by service clubs or could be added progressively as more money became available to the institution.

Saint Thomas Orphans' Home is maintained by the Sisters of the Charity of Providence of Montana. They obtain support from the Great Falls Community Chest, local welfare agencies, local service organizations, relatives of children in the institution, and from private donations. These sources would supply the necessary funds to construct and operate the new facilities.
FOOTNOTES

1. Interview with Sister Lucy, Administrator, Saint Thomas Orphan's Home, Great Falls, Montana, January 14, 1968.

2. Ibid


4. Sister Lucy


FOOTNOTES (cont.)


12. Ibid. Section 45.
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12. Weather Bureau, U.S. Department of Commerce, "Climate 
of Montana," U.S. Government Printing Office, 

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Home for Children, Helena, Montana, 59601, Per­
AN ORPHANAGE

to replace

SAINT THOMAS ORPHAN'S HOME,
Great Falls, Montana

In accordance with the now prevalent trend in orphanages, I have decided to design Saint Thomas Orphan's Home as a "cottage style orphanage". That is, the children will live in residential type units with two house parents to a "cottage", which is as much like a normal family residence as practical. It will contain kitchen, dining room, living room, recreation room, play and hobby room, utility and storage rooms, and bedrooms. The children will be housed three to a bedroom, and 12 to a cottage.

The orphanage also requires an Administration Building. This building will include offices for the Orphanage Administrator and a Caseworker; Conference rooms for intimate meetings of the Administrator or Caseworker with welfare workers, parents, or children; A large Meeting room for meetings of House Parents; a Chapel with an adjoining office for a Priest; and a mechanical and storage room.

The site was planned in such a way that all vehicular traffic to the site passes the Administration building. All the buildings orient to the inner open area, which will serve as the recreation area for the complex.

Entry to the Chapel is through an informal court with a statue of Saint Thomas as a focal point. (There is also secondary access through the public entry.)