SITE MECHANICS (con't)

AREA SOILS:

Includes some ice-contact stratified drift. Gt, mainly ground moraine. Gta, mainly and-moraine

SOIL DESCRIPTION: BLOUNT (BcB2): The Blount series consists of deep, nearly level and gently sloping, somewhat poorly drained soils on uplands. These soils formed in glacial till that had a mantle of loess 7 to 11 inches thick. The native vegetation was mixed hardwoods.
SITE MECHANICS (con't)

In a representative profile the surface layer is dark grayish-brown silt loam about 7 inches thick. Just below is about 2 inches of light brownish-gray silt loam. The subsoil, about 24 inches thick, is brown to dark grayish-brown and is dominantly silty clay. It has yellowish-brown mottles. The underlying material is olive-brown silty clay loam glacial till that is mottled and calcareous.

Blount soils are low in content of organic matter. The supply of phosphorus is low, and the supply of potassium is medium or high. Available moisture capacity is high, and permeability is slow and medium on the gently sloping ones. The plow layer is medium acid in areas that have not been limed.

These soils are well suited to corn, soybeans, and small grains. Crops on these soils respond well to lime and fertilizer. On eroded gently sloping soils, erosion is the major hazard.

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Permeability</td>
<td>0.63-2 inches/hour</td>
</tr>
<tr>
<td>Available Moisture Cap.</td>
<td>0.17-0.19 inches/in. soil</td>
</tr>
<tr>
<td>Reaction</td>
<td>6.1-6.5</td>
</tr>
<tr>
<td>Frost Heave Potential</td>
<td>Moderate</td>
</tr>
<tr>
<td>Shrink/swell</td>
<td>Low</td>
</tr>
<tr>
<td>Liquid Limit</td>
<td>39</td>
</tr>
<tr>
<td>Opt. Moisture</td>
<td>22%</td>
</tr>
<tr>
<td>Max. Density</td>
<td>98 lb./cu. ft.</td>
</tr>
</tbody>
</table>

PEWAMO (Pg): The pewamo series consists of deep, nearly level, very poorly drained soils. These soils formed in glacial till on flats and in upland depressions in the northern two-thirds of the county. The native vegetation was mixed hardwoods, swamp grasses, and sedges.

In a representative profile the surface layer is about 12 inches of very dark gray silty clay loam. The subsoil is about 33 inches thick and is gray, mottled, and firm. It is mainly silty clay in the upper 22 inches and silty clay loam below. The underlying material is grayish-brown and pale-brown, firm, calcareous clay loam.
Pewamo soils are high in content of organic matter. Supplies of phosphorus and potassium are low. Available moisture capacity is high, and permeability is slow. Runoff is very slow, and water ponds on the surface in places. The plow layer is neutral in areas that have not been limed.

If drained, these soils are well suited to corn, soybeans, and small grains. Crops on these soils respond well to fertilizer, and fertility levels can be built up over a period of time and easily maintained. Lime is not needed. Wetness is the major limitation.

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Permeability</td>
<td>.2-.63 inches/hour</td>
</tr>
<tr>
<td>Available Moisture Cap.</td>
<td>.18-.2 inches/in. soil</td>
</tr>
<tr>
<td>Reaction</td>
<td>6.6-7.3</td>
</tr>
<tr>
<td>Frost Heave Potential</td>
<td>Moderate or High</td>
</tr>
<tr>
<td>Shrink/swell</td>
<td>Moderate</td>
</tr>
<tr>
<td>Liquid Limit</td>
<td>53</td>
</tr>
<tr>
<td>Opt. Moisture</td>
<td>21%</td>
</tr>
<tr>
<td>Max. Density</td>
<td>101 lb./cu. ft.</td>
</tr>
</tbody>
</table>

(Information collected at the U.S. Department of Soil Conservation, June 30, 1980)
SITE MECHANICS (con't)

BEDROCK:

COMMENTS: Limestone in the area of the site is 22'-0"+ down with a 2'-0"+ layer of gravel above. This stratification rises toward the surface to the east. In approximately five miles the limestone rises to the surface.
FLOOD PLANE:

ZONE A

PLUM TREE
SITE RELATIONSHIPS:

KEY:
A - House
B - Farm Buildings
C - Farm Land
D - Woods
E - Cemetery
F - Dead End
G - Eikenberry Ditch
KEY

A - Wild Strawberries & Raspberry
B - Young Saplings with 8' Ceiling
C - Open Above
D - Dense Growth
E - Wild Plum Trees
F - Brush Pile
G - Farm Land

Comments: Ground cover consists of various types of vegetation, these include wild strawberries, raspberries, wild plums, blackberries, apple & pear trees, mosses, wild flowers, grasses, and saplings. This area is also host to wildlife of all types. The most important factor to the habit of this site is the variety of bird types. The majority of the large vegetation fall into three types: maple, oak, and fruit trees.
SPECIAL FEATURES:

KEY:

A - Brush Pile: Has become a refuge for wildlife and vegetation has continued to grow around and on the pile.

B - Low Area: Water tends to stand, has become a breeding ground for mosquitoes.

C - Wash Out: Caused by a down field tile in the field to the south.

D - Drain: Water outlet for field tile to the south.

E - Access: Access from 300 E. County road that is reasonably traveled.

F - Access: Access from 500 S. County road that is a dead end cut off by I-69.
<table>
<thead>
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</tr>
</thead>
<tbody>
<tr>
<td>Maximum Daily Temp.</td>
<td>37</td>
<td>38</td>
<td>46</td>
<td>61</td>
<td>72</td>
<td>83</td>
<td>87</td>
<td>84</td>
<td>77</td>
<td>66</td>
<td>50</td>
<td>38</td>
<td></td>
</tr>
<tr>
<td>Minimum Daily Temp.</td>
<td>22</td>
<td>21</td>
<td>28</td>
<td>38</td>
<td>50</td>
<td>57</td>
<td>63</td>
<td>62</td>
<td>54</td>
<td>43</td>
<td>32</td>
<td>23</td>
<td></td>
</tr>
<tr>
<td>Average Daily Temp.</td>
<td>28</td>
<td>30</td>
<td>38</td>
<td>50</td>
<td>61</td>
<td>72</td>
<td>74</td>
<td>73</td>
<td>66</td>
<td>55</td>
<td>41</td>
<td>30</td>
<td></td>
</tr>
<tr>
<td>Temperature Range</td>
<td>16</td>
<td>18</td>
<td>17</td>
<td>23</td>
<td>22</td>
<td>23</td>
<td>23</td>
<td>25</td>
<td>23</td>
<td>22</td>
<td>18</td>
<td>16</td>
<td></td>
</tr>
<tr>
<td>Days of Maximum Temp.</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>4</td>
<td>6</td>
<td>6</td>
<td>2</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>18</td>
</tr>
<tr>
<td>Days of Minimum Temp.</td>
<td>28</td>
<td>25</td>
<td>23</td>
<td>8</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>5</td>
<td>18</td>
<td>27</td>
<td>134</td>
</tr>
<tr>
<td>Last Day 32 Temp.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>April 30</td>
</tr>
<tr>
<td>First Day 32 Temp.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Oct. 10</td>
</tr>
</tbody>
</table>

**COMMENTS:** The site falls within the temperate climatic region. The temperate zone has a distribution of high heating requirements, then periods of high cooling requirements. Seasonal winds from the northwest and south with periods of high humidity, and large amounts of precipitation. Intermittent periods of clear sunny days followed by periods of overcast days. The most critical months are November, December, January, February, and March. These months have low daily temperatures for a majority of the days. The remaining months have a large daily temperature range, an average of 24°.
CLIMATIC CONDITIONS

HEAT:

<table>
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<tr>
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</tr>
</thead>
<tbody>
<tr>
<td>Total Heating Days</td>
<td>1800</td>
<td>1000</td>
<td>900</td>
<td>450</td>
<td>180</td>
<td>180</td>
<td>0</td>
<td>0</td>
<td>20</td>
<td>20</td>
<td>20</td>
<td>20</td>
<td>710</td>
</tr>
<tr>
<td>Average Sunshine</td>
<td>115</td>
<td>140</td>
<td>190</td>
<td>220</td>
<td>275</td>
<td>310</td>
<td>340</td>
<td>305</td>
<td>250</td>
<td>220</td>
<td>130</td>
<td>110</td>
<td>2600</td>
</tr>
<tr>
<td>Average Sunshine (hour)</td>
<td>136</td>
<td>210</td>
<td>308</td>
<td>390</td>
<td>500</td>
<td>548</td>
<td>540</td>
<td>425</td>
<td>400</td>
<td>275</td>
<td>155</td>
<td>120</td>
<td>340</td>
</tr>
<tr>
<td>Average Solar Langley's Rad.</td>
<td>1000</td>
<td>1000</td>
<td>1000</td>
<td>1000</td>
<td>1000</td>
<td>1000</td>
<td>1000</td>
<td>1000</td>
<td>1000</td>
<td>1000</td>
<td>1000</td>
<td>1000</td>
<td>1000</td>
</tr>
</tbody>
</table>

COMMENTS: The summer months provide the greatest amount of sunshine 60% to 75%. The degree days are much higher throughout the winter months. The problem in this area is the non-consistency of daily climatic conditions.

PRECIPITATION:

<table>
<thead>
<tr>
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<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Precip. (mon.)</td>
<td>2.8</td>
<td>2.3</td>
<td>3</td>
<td>4</td>
<td>4</td>
<td>3.5</td>
<td>3</td>
<td>2.8</td>
<td>2.8</td>
<td>2</td>
<td>2.8</td>
<td>2</td>
<td>38</td>
</tr>
<tr>
<td>Averg. Days With 1&quot;+</td>
<td>11</td>
<td>10</td>
<td>13</td>
<td>14</td>
<td>12</td>
<td>11</td>
<td>10</td>
<td>8</td>
<td>10</td>
<td>8</td>
<td>10</td>
<td>12</td>
<td>128</td>
</tr>
<tr>
<td>Average Dew Point</td>
<td>20</td>
<td>22</td>
<td>28</td>
<td>36</td>
<td>48</td>
<td>58</td>
<td>62</td>
<td>61</td>
<td>54</td>
<td>44</td>
<td>33</td>
<td>23</td>
<td>41</td>
</tr>
<tr>
<td>Average R. H.</td>
<td>79</td>
<td>76</td>
<td>70</td>
<td>68</td>
<td>70</td>
<td>68</td>
<td>70</td>
<td>73</td>
<td>72</td>
<td>74</td>
<td>80</td>
<td>93</td>
<td></td>
</tr>
</tbody>
</table>

COMMENTS: Precipitation is distributed evenly through the year. The major constraint with this area is the high humidity that causes discomfort in the summer and winter.
### CLIMATIC CONDITIONS

#### WIND:

<table>
<thead>
<tr>
<th>Direction</th>
<th>Jan</th>
<th>Feb</th>
<th>Mar</th>
<th>Apr</th>
<th>May</th>
<th>June</th>
<th>July</th>
<th>Aug</th>
<th>Sept</th>
<th>Oct</th>
<th>Nov</th>
<th>Dec</th>
<th>Annual</th>
</tr>
</thead>
<tbody>
<tr>
<td>Average Speed</td>
<td>12</td>
<td>13</td>
<td>12</td>
<td>12</td>
<td>11</td>
<td>9</td>
<td>8</td>
<td>8</td>
<td>9</td>
<td>12</td>
<td>11</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>Max. Air Speed</td>
<td>59</td>
<td>52</td>
<td>65</td>
<td>60</td>
<td>54</td>
<td>65</td>
<td>61</td>
<td>47</td>
<td>56</td>
<td>41</td>
<td>57</td>
<td>52</td>
<td>65</td>
</tr>
<tr>
<td>Aver. Surface Speed</td>
<td>4</td>
<td>4</td>
<td>3</td>
<td>3</td>
<td>6</td>
<td>6</td>
<td>6</td>
<td>6</td>
<td>6</td>
<td>6</td>
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</tr>
<tr>
<td>Aver. Surface Dir.</td>
<td></td>
<td></td>
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<tr>
<td>Sea Level Press.</td>
<td>30.1</td>
<td>30</td>
<td>30</td>
<td>30</td>
<td>29</td>
<td>29.9</td>
<td>29.9</td>
<td>30</td>
<td>30</td>
<td>30</td>
<td>30</td>
<td>30</td>
<td>30.04</td>
</tr>
</tbody>
</table>

**COMMENTS:** The winter winds are primarily out of the north-west and the summer winds out of the south-west. The winds are favorable for cooling in the summer and should be taken advantage of. The structure must be protected against gusting winter winds, that could be detrimental to the energy conservation methods.
PSYCHOMETRIC RELATIONSHIP:

CLIMATIC CONDITIONS
CLIMATIC CONDITIONS (con't)

MICRO CLIMATE:

NOISE/VIBRATION: The major source of noise and vibration is produced by I-69 which is approximately one half mile to the west. During harvest season for a short duration, farm machinery will produce some noise. Other than these two sources the area is very quiet, except for the wildlife which is desirable.

DUST/SMOKE/ODORS: Dust is a major factor during harvest season and when fields are unplanted. Dust will possibly affect the efficiency of solar devices, and require the cleaning of south windows. Odors are also farm oriented due to application of chemicals and spreading of animal refuge.

CLIMATIC CONDITIONS: The formation of vegetation creates a natural heat sink in the summer. This increases the temperature substantially and the only air movement is due to the convective cycle. In the winter time this reverses the northern winds fill the central portion of the site with snow.
climatic conditions analysis
CLIMATIC CONDITIONS ANALYSIS

<table>
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</tr>
</thead>
<tbody>
<tr>
<td>Temperature</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Wind</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
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</tr>
<tr>
<td>R.H.</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

The temperature requires a means of heating seven months out of the year. A south exposure would be advantageous in the winter, however during the summer it must be controlled to reduce unwanted heat. The winter solar angle being lower, 26°, allows direct light into a space. The altitude during the summer increases to 73°, therefore most direct light can be reduced by using overhangs.

![Diagram showing light angles]

The color of materials on the interior and exterior also can affect the temperature and light quality of a space. Light colors reflect light and should be oriented toward the sun. Dark colors absorb light and heat and should be oriented to produce the desired results. This plays a very important role in the selection of roofing materials, dependent upon the local climate.

During the winter months the winds are a disadvantage and should be obstructed. In the summer the winds should be brought into the structure to be used for cooling. The winter winds come out of the northwest and the summer winds out of the southwest. The response to these conditions can be one of design rather than that of mechanical. Penetractions for ventilation must be placed to the southwest-south direction with an exhaust vent located to the northeast-north direction, to create a cross ventilation condition. The winter winds must be screened to the north and west with some form of a barrier. Openings in these directions must be kept at a minimum due to the thermal quality of glass and light does not fall directly on this section of the structure.
CLIMATIC CONDITIONS ANALYSIS (con't)

The best form for the imposed conditions must conform to the following climatic factors:

- Maximize the south facade
- Reduce the north exposure
- Open up to the summer winds
- Deflect winter winds

Traditionally the best form for the control of the sun in this area is the rectangle elongated to the east and west.

A variation of this, that functions under the same restrictions, is a rectangle in plan and a triangle in section. This further minimized the north exposure and deflects the winter winds.
CLIMATIC CONDITIONS ANALYSIS (con't)

SITE:

Following are the shadow patterns of the site in the summer and the winter at 12:00 noon; along with these are the locations for possible construction.

The central portion of the site is more open allowing light to penetrate, especially in the summer. In the winter the surrounding vegetation casts long shadows. A site in this area would take advantage of the natural opening causing the least distraction to the existing environment. This would provide unobstructed solar access to the south. In the winter this is an advantage, but in the summer the introduction of a mechanical control to reduce any added heat. The site to the north provides some protection from winter winds. As mentioned earlier this section is the worst environmentally. In the summer it becomes a heat sink, and in the winter it fills with snow. (SEE SITE LOCATION DRAWING-A)

The second and best location is at the southwest edge. This has the same characteristics as the other, but has better protection from winter winds and moves from the heat sink conditions. Access is easier to handle and the creek can become an important design element. (SEE SITE LOCATION DRAWING-B)
CLIMATIC CONDITIONS ANALYSIS (con't)

CLIENT: (program)

<table>
<thead>
<tr>
<th></th>
<th>WINTER</th>
<th>FALL-SPRING</th>
<th>SUMMER</th>
</tr>
</thead>
<tbody>
<tr>
<td>Foyer</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Living Room</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dining Room</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Kitchen</td>
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<td></td>
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<tr>
<td>Utility Room</td>
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<td></td>
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<tr>
<td>Family Room</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>M. Bedroom</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Guest Room</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Child. Room</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>M. Bath</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bath</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Public Bath</td>
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<td></td>
<td></td>
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<tr>
<td>Mech. Room</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Garage</td>
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<td></td>
<td></td>
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<tr>
<td>Patio</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Studio</td>
<td></td>
<td></td>
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<tr>
<td>Multi- Pur.</td>
<td></td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Condition 1</th>
<th>Condition 1&amp;2</th>
<th>Condition 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>WARM</td>
<td></td>
<td></td>
</tr>
<tr>
<td>LUKE-WARM</td>
<td></td>
<td></td>
</tr>
<tr>
<td>COOL</td>
<td>+</td>
<td></td>
</tr>
<tr>
<td>COLD</td>
<td></td>
<td>+</td>
</tr>
<tr>
<td>NEUTRAL</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

FOYER:

weekend

6:00 - 10:00

COMMENTS: The foyer is used at various times through the day, with the heaviest use during the indicated times. Other common times are at 8 a.m. and 12 noon. The major statement should be expressed at 6:00 taking advantage of the sun and sunset.

Orientation: south-west

110
CLIMATIC CONDITIONS ANALYSIS (cont')

LIVING ROOM:

• --- • --- 8 12

22
weekend

• --- • --- 7 12

COMMENTS: This is a predominantly an evening space getting some evening sun just before sunset. The patio will become the focus once the sun has set.
Orientation: west

DINING ROOM:

• --- • --- 6 8

• --- • --- 11 1 6 8

weekend

COMMENTS: Inwardly focusing to the Living Room. Possible to use as a secondary focus the patio through the Living Room.
Orientation: internal

KITCHEN:

• --- • --- 6 8 12 1 5 6 7 8

• weekend

• --- • --- 7 8 11 12 1 2 5 6 7 8

COMMENTS: The Kitchen is the most widely used space through the day. The eating area should get morning light and filter evening light. The prep. area should be a diffused lighting being careful to not cause a glare problem.
CLIMATIC CONDITIONS ANALYSIS (con't)

KITCHEN (con't):

The prep. area should get some direct light and provide a view to the outside.
Orientation: Eating-east, Prep.-west

UTILITY ROOM:

COMMENTS: This is a function oriented space with a few external considerations. The major use is on the weekends, but not for any length of time at one time.
Orientation: internal

FAMILY ROOM:

COMMENTS: This is a recreation space used at all times of the day. It is next after the Kitchen for the most used. It is equally oriented to the exterior and interior expanding to the patio. As the Living Room it should be oriented to take advantage of the sunset.
Orientation: south-west
CLIMATIC CONDITIONS ANALYSIS (con't)

MASTER BEDROOM:

12 5 11 12

weekend

COMMENTS: The time in which the bedroom is occupied is after sunset. The major light expression is to be made at sunrise to inform the occupants that it is morning. Orientation: east

GUEST ROOM:

8 10

weekend

COMMENTS: Similar to the Master Bedroom and should receive morning light. The light considerations are not as critical as the other bedrooms due to the multi-functional. Orientation: east

CHILDREN'S ROOM:

7 4 6 9

weekend

8 10 12 4 10
CLIMATIC CONDITIONS ANALYSIS (con't)

CHILDREN'S ROOM (con't):

COMMENTS: The primary use is through the night hours with secondary use on and off during the day. At this time its use will be for play and entertainment. Orientation: south

MASTER BATH:

\[
\begin{array}{c}
\text{5 6} \\
\text{8 9} \\
\text{8 9 10 11}
\end{array}
\]

weekend

COMMENTS: Lighting is not of major concern, but ventilation for exhausting odors and moist air. Orientation: internal

BATH:

\[
\begin{array}{c}
\text{8 11} \\
\text{8 11} \\
\text{8 12}
\end{array}
\]

weekend

COMMENTS: Lighting is to be brought in during prime day hours, but must maintain some degree of privacy. Again ventilation must be provided for the exhaust of odors. Orientation: internal (south)

PUBLIC BATH:

\[
\begin{array}{c}
\text{9 12} \\
\text{9 12}
\end{array}
\]
PUBLIC BATH (con't):

COMMENTS: This bath requires little natural lighting to meet the basic needs.
Orientation: internal

MECHANICAL ROOM:

COMMENTS: The location of the windows should be based on the internal functions and the type of system used.
Orientation: internal

GARAGE:

COMMENTS: The orientation is in consideration of a passive heating system and aesthetics.
Orientation: south

STUDIO:
CLIMATIC CONDITIONS ANALYSIS (con't)

STUDIO (con't):

weekend

COMMENTS: Morning and evening light is strongly desired; afternoon light should be omitted. Glare and reflection must be controled.
Orientation: east-west

MULTI-PURPOSE SPACE:

weekend

COMMENTS: Solar orientation is critical due to the range of activities. Morning and evening light is desirable, and as the Studio glare and reflection must be controled.
Orientation: east-west

PATIO:

weekend

COMMENTS: The patio is used extensively off and on as a circulation path. It is also used as a lounging area at the indicated times. Direct light must be shaded from the lounge areas.
Orientation: Multi-directional
CONCEPTUAL DESIGN
CONCEPTUAL DESIGN

OPTION 1: REFLECT CREEK GEOMETRY

OPTION 2: REFLECT SOLAR GEOMETRY

FIELD
CORN • SOYBEANS • WHEAT
'The Place of Houses', by Charles Moore, Gerald Allen, and Donlyn Lyndon lists six interior organizations that are most often used in housing design. Most housing types are composed of one or several of these types. Below each of these types are diagramed to show their relationship to other rooms and their important characteristics.

**Rooms Linked:**

**Variation:**

**Rooms Bunched:**
CONCEPTUAL DESIGN

ROOMS AROUND A CORE:

ROOMS ENFRONTING THE OUTSIDE:

A GREAT ROOM WITHIN:

A GREAT ROOM ENCOMPASSING:
Diagramed below are some of the possibilities for interior organization; with relation to solar design and the interior organizations mentioned previously. These have been used as an element in a sequential process for gathering data for application to conceptual design and eventually design development.

- Heat one large centrally located space and distribute heat to other spaces as needed.

- Heat each space individually as required.

- Heat selected rooms and distribute to near by spaces.
CONCEPTUAL DESIGN

•

COMBINATION PASSIVE DIRECT GAIN & TROMBE WALL FOR ADDED HEAT DURING NIGHT HOURS.

•

ACTIVE SYSTEM - PANELS TO SPACE AS NEEDED.
Using the climatic conditions analysis of the program it is possible to locate the spaces with relation to a north-south axis. The spaces to the south require the most heat and the spaces to the north the coolest. Further use of the space/use charts on pages and will be vital during schematic design and design development.

The following is a synthesis of the data collected to this point. The following show the possible interior organizations to use the existing environmental conditions.
This interior layout uses an enlarged atrium (foyer) to absorb south light, allowing the space to super heat. The heated air will then be distributed to other spaces as needed. This is done by a corridor surrounding the atrium. A dense thermal mass is used to absorb the heat for use during night hours. The spaces to the north create a buffer area from the northwest winds. These spaces require less heat and are spaces that are not occupied a large amount of time through the day.
This concept operated on the same principle as the previous concept, using a buffer area composed of less used spaces, and using an enlarged corridor that superheats the air for distribution. The kitchen is centrally located to take advantage of the mechanical heat produced by machines. The spaces are organized so the spaces requiring the most heat are located to either side of the kitchen.
This layout could best be called the house within a house concept, due to its distinct separation of spaces. It is simply a division of the required spaces into a primary living area and a secondary living area. The primary area is composed of spaces that are the heaviest and most necessary. The secondary area is less-used and can be separated from the rest of the living area. With this organization it becomes possible to totally separate the primary section from the secondary, during times of extreme weather conditions.
CONCEPT B-1

SITE:

PLAN:

SECTION:
CONCEPT R-1

ENVIRONMENTAL:
CONCEPT C-1

ENVIRONMENTAL:

[Diagram showing layout with annotations for environmental considerations, including buffer zones and wind directions.]
CONCEPT E-1

ENVIRONMENTAL:

Living Living Living Living Living Living

Buffer Buffer Buffer Buffer Buffer Buffer Buffer Buffer Buffer Buffer Buffer
Living Living Living Living Living Living

Solar Light Solar Light Solar Light
ENVIRONMENTAL:
SCHEMATIC DESIGN

The following drawings are a progression of sketches that have lead to the final design. The drawings progress from the synthesis of ideas from previous studies relating to the site and the environment.
SCHEMATIC DESIGN

PLAN DEVELOPMENT:
This has developed into the molding schematic plan that all other variations have developed from.
SCHEMATIC DESIGN (cont)
SCHEMATIC DESIGN (con't)
SCHEMATIC DESIGN (Presentation Drawings)

Drawings prepared for presentation. October 10, 1980
The next series of sketches are a further development of detailing, section, and schematic drawings. The major emphasis at this point was the development of the facade and systems.
VENT TO INSIDE, CONTROLLED FROM BELOW.

VENT TO OUTSIDE CONTROLLED FROM BELOW.
allow light to be fun into back areas.
Second level may fit a combination of light & shade.
Entry area to provide a vestibule.