one story, sunken or raised
two story ground level base
two story ground level, with built up
two story sunken
two story sunken, with built up

Sun location
avoid location of bedroom windows on the east side (this is not very vital because of student rising time)
avoid location of classroom windows on the south side
avoid play areas and courtyards with little light

Noise direction
avoid classroom locations by drives, parking, playgrounds, etc.

Wind direction
block the wind from play areas (wind can be very annoying for hearing aid users)
avoid whistling wind tunnels or enclosures
Rain and snow
provide for proper drainage, especially for the
play areas
provide play patios (mentioned under Outside play)

External orientation
use of a landmark to orientate from all sides of
the facility may be a tower, central second
story, patch of trees, etc. (useful also to be
viewed from to understand the facility in plan
simultaneously).

paths should have a fairly perceivable destination.
Paths should be differentiated in motion by
turning, rising, and falling surfaces facing
one direction along a path and may have a coded
color. Tactile and inertial senses should be
considered in elements of the path. A joint
of more than two paths should be avoided.
(these are "quite difficult to conceptualize").
There should be a simplicity of form for the
paths to make a clear image. This is in a
topological rather geometrical sense. Edges
should have a continuity of form. Much
visibility of this continuity is also important
for comprehending. A differentiating of inter-
ior exterior sides is important in many cases
of dealing with edges.
districts such as a bedroom complex, home complex,
or central complex should be clearly indicated
by color, visual continuity, texture, space
separation, etc. It is necessary to have some
generality in order to avoid confusion over
much differentiation.

nodes that are very important should be clearly
indicated.

This particular section of orientation should not
be taken lightly. Proper understanding of the
facility and environment with regard to orient-
ation allows for better emotional behavior, and
encourages conceptualization. Kevin Lynch points this out in the following statement: "Although such skills might seem unimportant today, we see things in a different light if we consider the cases of men who through brain injury, have lost the ability to organize their surroundings". ... "they cannot structure their images into any connected system".

- Phasing and design

The following four categories are design alternatives as regards to phasing in particular.

A general definition, advantages, and disadvantages are given for each alternative.

1. One shot design:
   - no phasing, all or nothing design
   - can be very costly due to amount of money needed at one time
   - does not account for changes during construction, nor afterwards
   - the demand of total construction at one time is not advantageous because the other alternatives have this option

2. Phased design:
   - a definite design (as in no. 1) including specific phases
   - practical as regards cost and time
   - since there is a definite design for the later phases, there is not especially a flexibility
to the design due to program changes
remodeling of original phases lack flexibility
and organization

3. smorgasbord design:
choice of design features of a wide variety of
options
practical as regards to cost and time
more options in design due to minor program changes
than phased design, however, there is not espe-
cially a great deal of flexibility
there is no real control to the planning and
organization of design throughout all phases
or options. Design options cannot be entirely
independent of each other, and the designs are
definite in form. Therefore, acceptance of
one option and elimination of another will
hinder the total design organization

4. field theory design:
(as shown by Walter Netsch)
specific and general designing and phasing within
a definite pattern or grid
allows for phasing, practical as regards cost
and time
provides a great deal of flexibility, major and
minor in later phases and remodeling
maintains a definite organization at all times
pattern allows for future changes not originally
expected


Long, Nicholas J.; Morse, William C.; and Newman, Ruth G., Conflict in the Classroom, Belmont, California; Wadsworth Publishing Company, Inc., 1965


Power, Desmond J., and Quigley, Stephen P., 
Problems and Programs in the Education of 
Multiply Disabled Deaf Children, University 

Sessler, Charles H., "Planning for the Multiply 
Handicapped Deaf Child", Indianapolis, Indiana, 
Hoosier, 1967.

Vernon, McCay, Multiply Handicapped Deaf Children, 
Washington, D.C., Council for Exceptional 

"Playing to Learn", Progressive Architecture, 

Social Environments for a Regional Centre for the 
Hearing Handicapped, Toronto, Architectural 
Services of the School Business Administration 

Goldhaber, William M., and Johnson, G. Cruille (eds.), 
Education of Exceptional Children and Youth, 

Lynch, Kevin, The Image of the City, Cambridge, Mass., 

Credits

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Special Education

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Elizabeth Foster - Indiana School for the Deaf

Marion Otto - Indiana School for the Deaf

Robert L. Kellogg - Indiana School for the Deaf

George Houk - Indiana School for the Deaf

Mrs. Penniston - Crossroads Rehabilitation,
Indiana School for the Blind

Sharon Grain - Morrison and Mock

Contact by Letter:

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Malcolm J. Norwood - U. S. Office of Education

William M. Cruickshank - University of Michigan
Design Development
Final Design
<table>
<thead>
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<th>MHDF</th>
<th>MHDF</th>
<th>I.P. Unit</th>
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<tbody>
<tr>
<td><strong>Square footage</strong></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Home (dorm)</td>
<td>30,736</td>
<td>14,400</td>
<td>15,925</td>
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<td>Indoor play &amp; observ.</td>
<td>8,640</td>
<td>6,000</td>
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<tr>
<td>Classroom space</td>
<td>13,824</td>
<td>9,600</td>
<td>10,250</td>
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<tr>
<td>Therapy (gym)</td>
<td>4,032</td>
<td>2,800</td>
<td>4,500</td>
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<tr>
<td>Administration and</td>
<td>4,464</td>
<td>3,400</td>
<td>11,025</td>
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<tr>
<td>maintenance, etc.</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Kitchen</td>
<td>4,184</td>
<td>3,600</td>
<td>2,975</td>
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<tr>
<td>Hall space</td>
<td>9,792</td>
<td>6,800</td>
<td>8,800</td>
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<tr>
<td><strong>Total</strong></td>
<td>66,572</td>
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<table>
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<th><strong>Cost</strong></th>
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<tr>
<td>$24/</td>
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<td>$20/</td>
<td>I.P.</td>
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<td>$30/</td>
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<td>$25/</td>
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</table>

12' grid

MHDF

1,600,000

1,120,000

1,070,000

I.P.

1,400,000

1,340,000
For purposes of cost (and space usage) evaluation, I have attempted to compare the proposed Facility for multiply-handicapped deaf children (MHDF) to the existing Interprimary Unit. Both of them have a capacity of 120 children; however, their programs are very different. There are several differences as to the kinds of space. For example, the MHDF has therapy spaces, the I.P. has a gymnasium; the MHDF has kitchenettes, the I.P. has a central kitchen and dining space; the MHDF has observation rooms, classroom group space, and indoor-outdoor play space, the I.P. has none.

The MHDF design has two columns to consider. The first column allows a 12' grid for the entire building (as shown in the drawings), and the second column allows a 10' grid. The effect of this space savings, implemented by reducing to 20' grid, would essentially be a minimal loss, because it is proportionately
reduced in all spaces. A classroom would be 20' x 20' instead of 24' x 24', hallways would be 10' wide instead of 12', etc.

Due to the building configuration, the cost per square foot of the MHDF was figured higher than that of the I.P. Unit. Comparing the MHDF (12') to the I.P. Unit there was a 50-56% increase in cost. However, the other MHDF (10') is only a 4.7-9.4% increase in cost over the I.P. Unit.

I believe the slight extra would be worthwhile. Of course, the MHDF has the ability to be built in phases depending on the demand or funds available. The I.P. Unit has no option.
Working Drawings