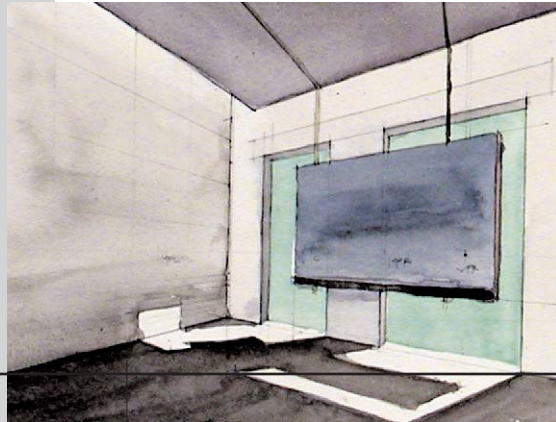
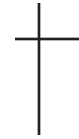


RHYTHMS OF CHANGE



**Rhythms of Change:**  
the Washington Waldorf School

James Robert Finn

Thesis Submitted to the faculty of

Virginia Polytechnic Institute  
and State University

in partial fulfillment of the requirements  
for the degree of

Master of Architecture

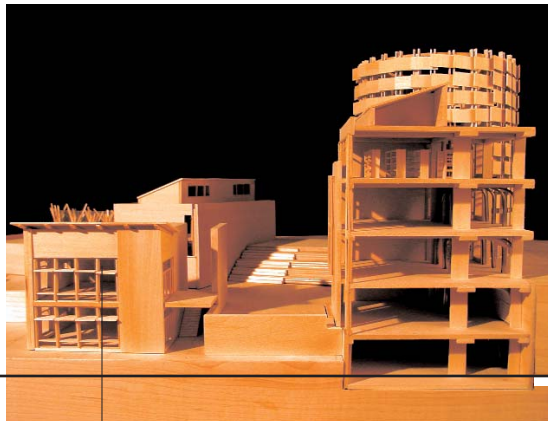
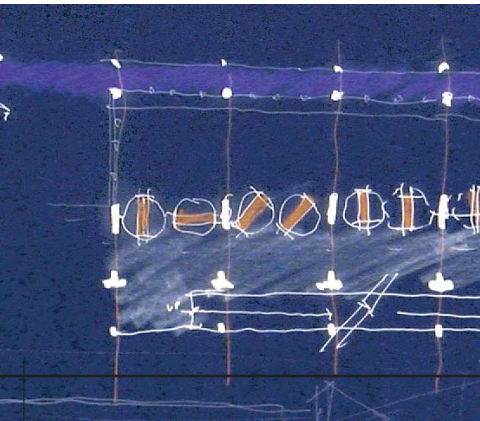
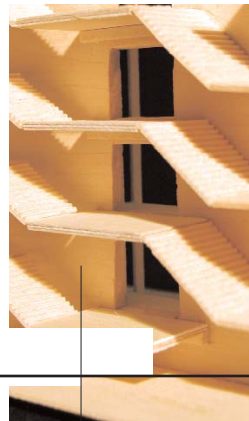
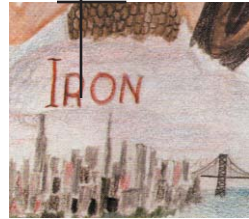
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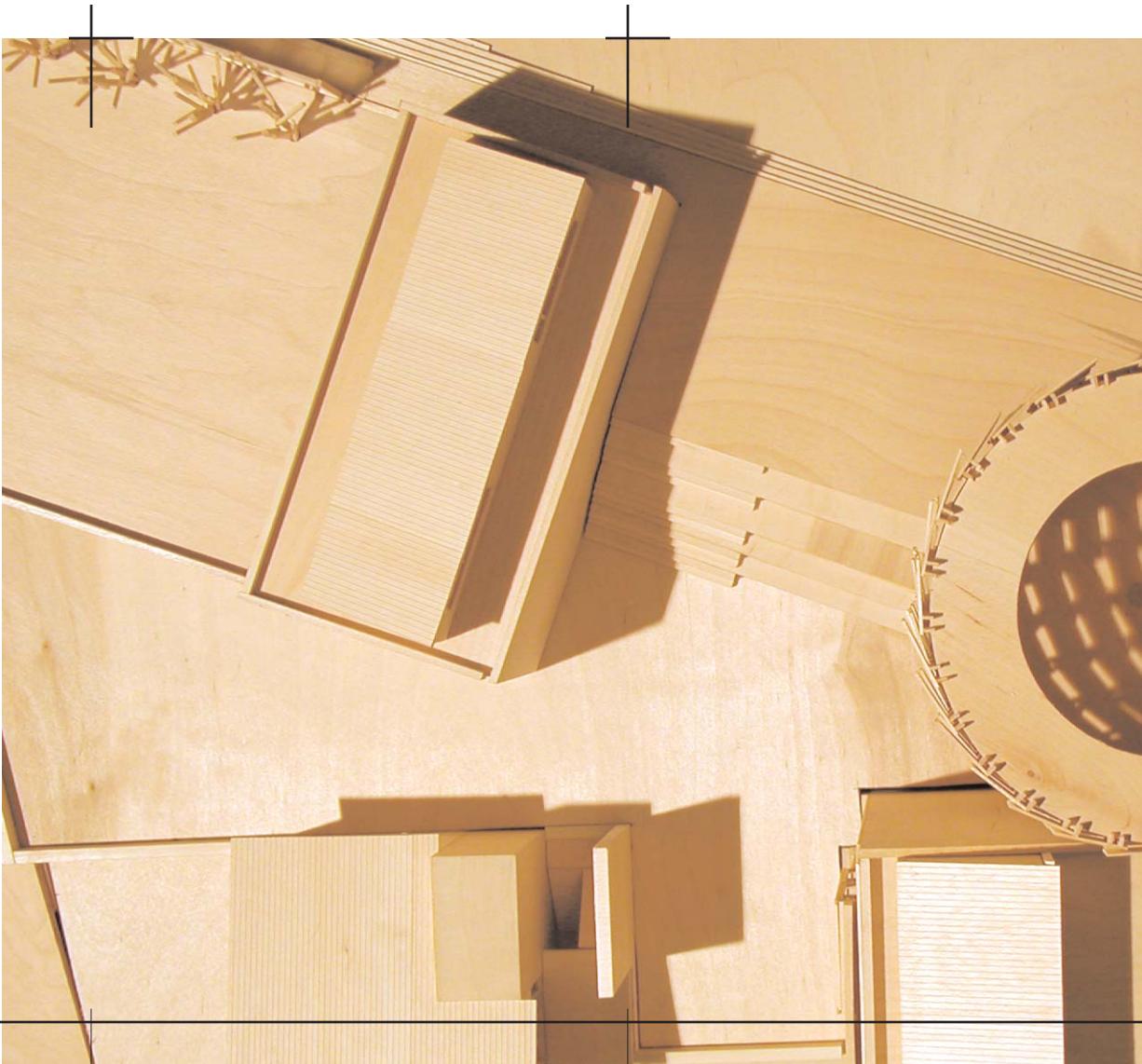
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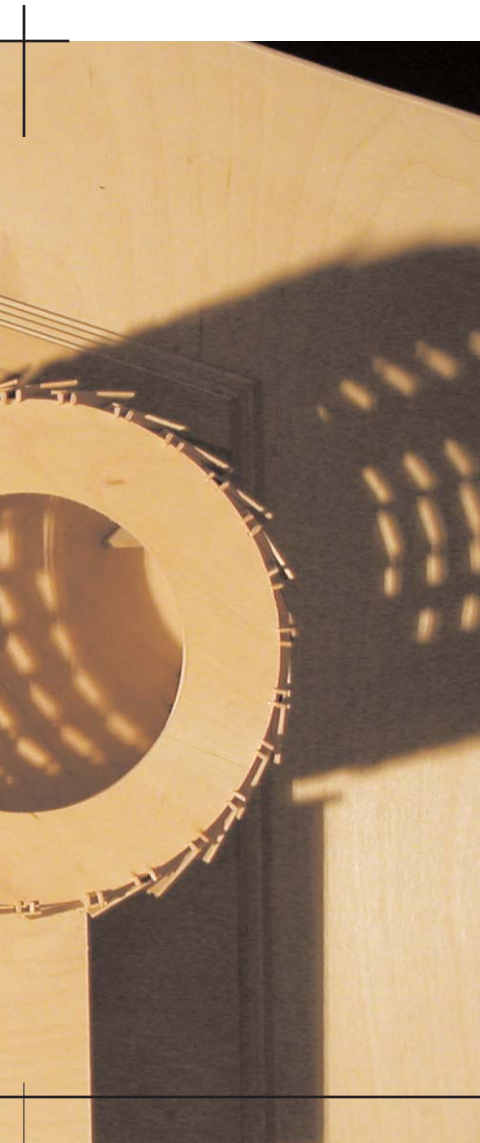
September 24, 2003  
Alexandria, Virginia

Keywords: Change, Rhythm, Eurythmy, Waldorf  
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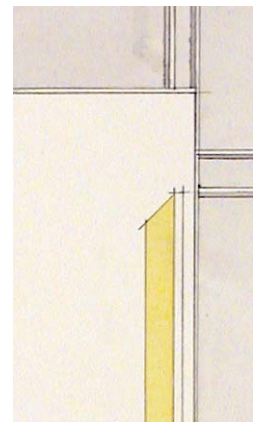
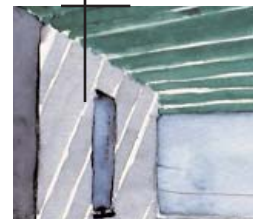


Juhani Pallasmaa writes, "We have the mental need to experience the reality that we are rooted in the continuity of time and in the man-made world, it is the task of architecture to facilitate this experience." (p. 22)

It is the intent of this thesis to investigate how to facilitate this experience through conscious perception and active participation in the changes that occur in a building over the course of a day and through environmental cycles.

Participating, both physically and mentally, in the changes that occur around and within the built environment creates a dynamic and engaging atmosphere that allows people to further their enjoyment and delight in being in the space.

This thesis investigates these ideas through the programmatic elements and educational ideas of The Washington Waldorf School and the site conditions of a 'transition site' between Rock Creek Park and the Woodly Park area of Washington, DC.



## A B S T R A C T

There are many people who have helped me along the way in accomplishing this.

My parents always provided opportunities for me to experience new things and grow at my own pace and I will always be thankful for everything they have done.

My committee and the professors at the Washington Alexandria Architecture Center have been a great source of inspiration and information as well as allowing all the students the freedom to explore their own thoughts.

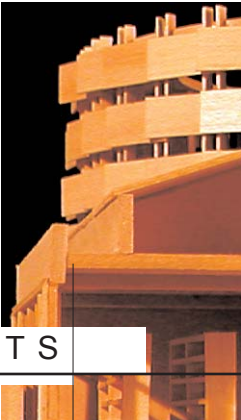
I would also like to thank Ed Buckley of the Washington Waldorf School for his time and enthusiasm in helping me learn about Waldorf Education.

I am also very grateful to have friends that were willing to commit their time and energy to helping me complete this endeavor. Charlie, Matt, May, Kevin, and Dan, thanks for all your help and dedication.

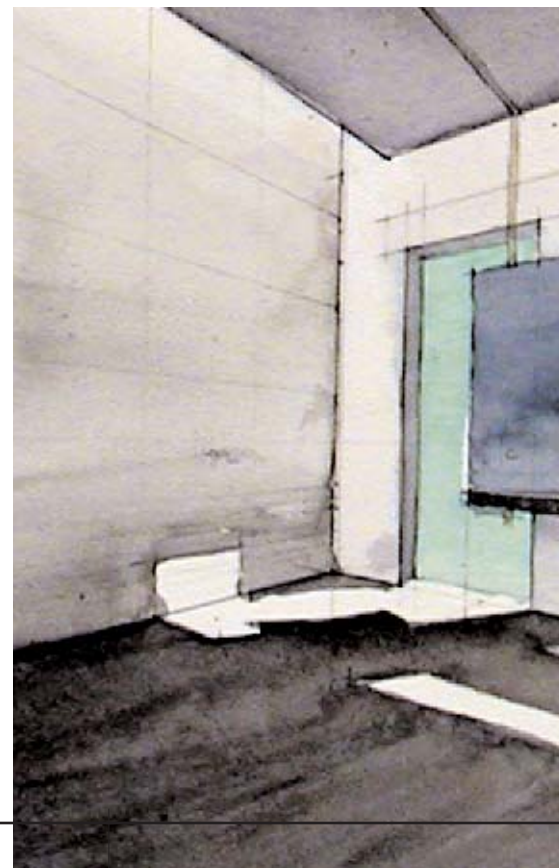
And Becky for always being supportive and an inspiration.

1	Introduction
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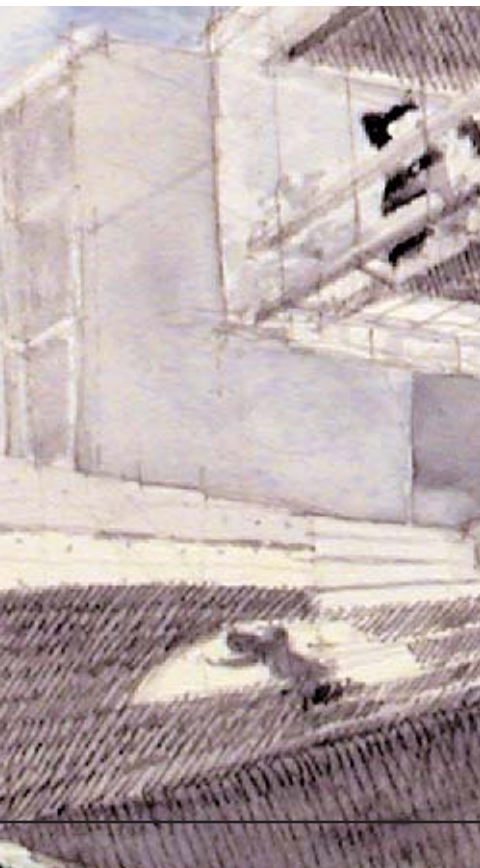
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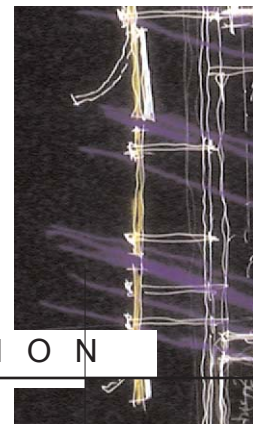
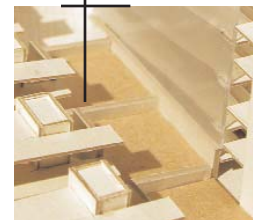
Three methods for experiencing change in architecture were investigated: change through perception, change through physical movement, and change in reaction to the environment.

Attending the school from kindergarten through 12th grade, Waldorf students experience the site, the buildings and the surrounding environment over a long period of time. This long tenure at the site allows the students to see seasonal change for many years with the building as a consistent backdrop. The facades of the buildings are used to create this backdrop and highlight the distinct seasons throughout the year.

Throughout the school, students and teachers also have the ability to physically manipulate the arrangement of partitions and

furnishings to suit the particulars of the lessons of the day. The manipulation of these partitions creates a rhythm within the building that has an overall consistent structure as well as many varied combinations.

The building also reacts to the environment by responding to the temperature as well as the precipitation. The reading room for the library is sheathed in bi-metallic panels that open and close, providing and denying light and views as the temperature changes. The Eurythmy Room is sheathed in frosted glass that becomes transparent when it gets wet.



I N T R O D U C T I O N

Waldorf education believes that each child's development can be categorized into a series of stages and that during each stage of development, children learn best in different methods. Each stage lasts roughly seven years, at which time a new 'body' is born and is able to be shaped with different tools of education. The first stage is characterized by learning through imitation, the second through imagination and the third through independence. Additionally, in the Waldorf Method, the relationship of the body in space is given a large role in the develop-

ment of the child. Each grade participates in Eurythmy, or movement education and teachers employ repetitive clapping, stomping and singing to enliven the subject matter and help the body remember. Waldorf education also considers the timing of different types of lessons and activities to be important. Each morning, students participate in longer lessons requiring more concentration and in the afternoon, shorter, more active lessons are taught.




student assembly



eurythmy





Architectural creation is the answer the human soul gives in order to regain a relationship while in earth, with the cosmos.


STEINER

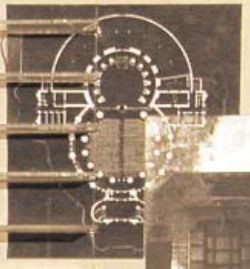

HUMAN EGO

ASTRAL BODY

ETHERIC BODY

PHYSICAL BODY







WEIGHT


BALANCE

SUPPORT

RHYTHMS OF LEARNING



IMITATION



IMAGINATION

INDEPENDENCE



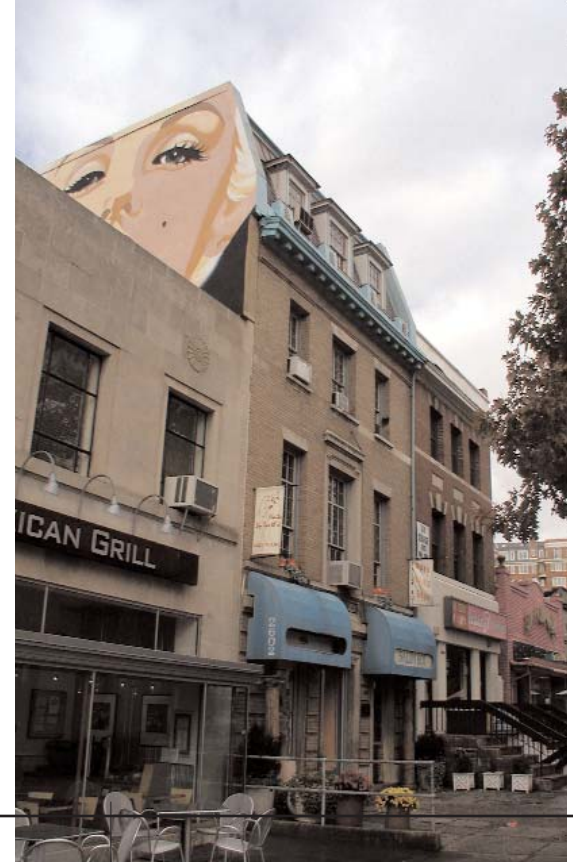
WALDORF METHOD

The site chosen for this investigation is the intersection of Connecticut Avenue and Calvert Street. It was chosen for its central location, proximity to Rock Creek Park and natural features. The Washington Waldorf School draws students from throughout the Washington metropolitan area, necessitating a central, easily accessible location, which this site afforded. The site is adjacent to the park, providing ample area for student activities and interaction with nature. It is a challenging site because it slopes steeply into

the park and generally has a southwest exposure. A large grove of crepe myrtles lines the lower bank of the site, creating a natural screen between the site and the Parkway access road. The Connecticut Avenue Bridge over Rock Creek Parkway provides a rhythmic and dramatic backdrop to the site.



lion

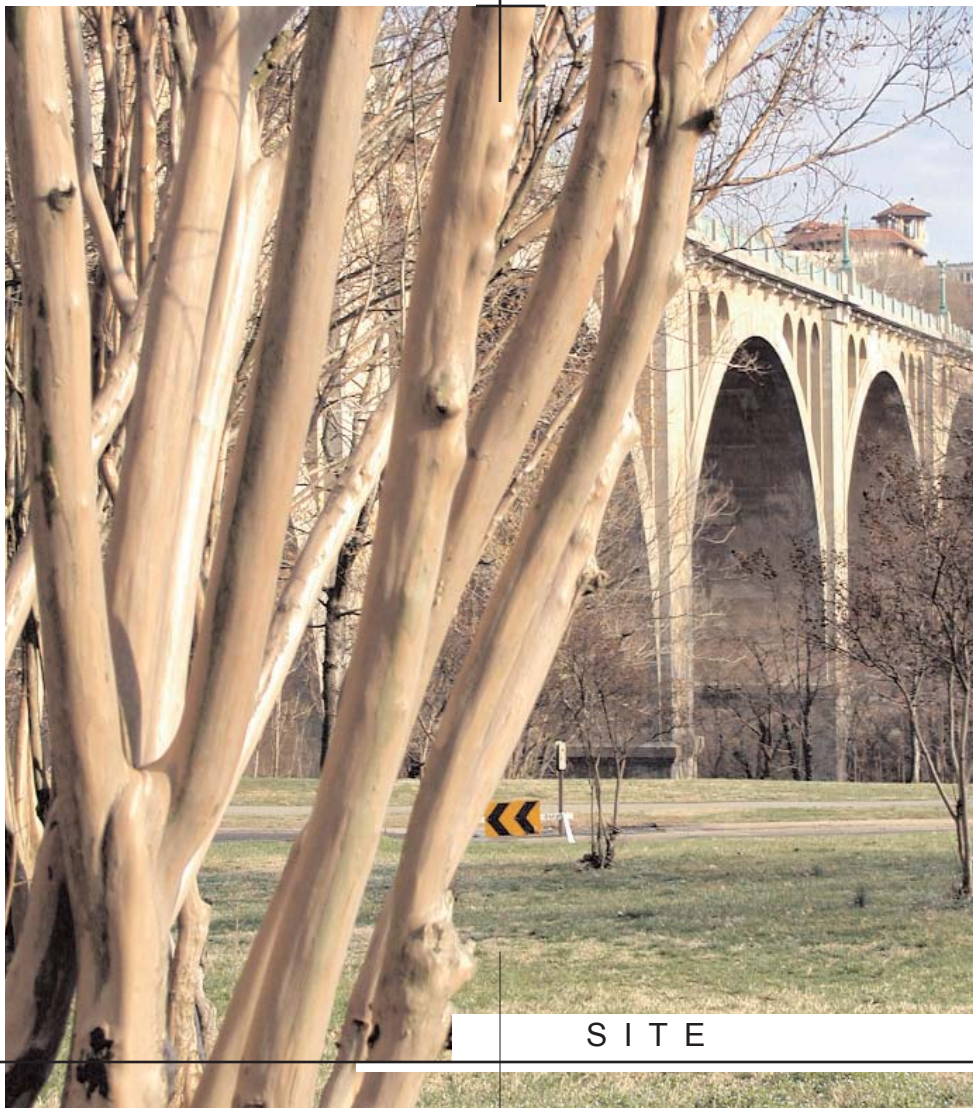


Connecticut Ave

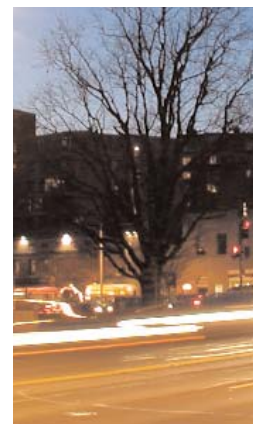




room under bridge

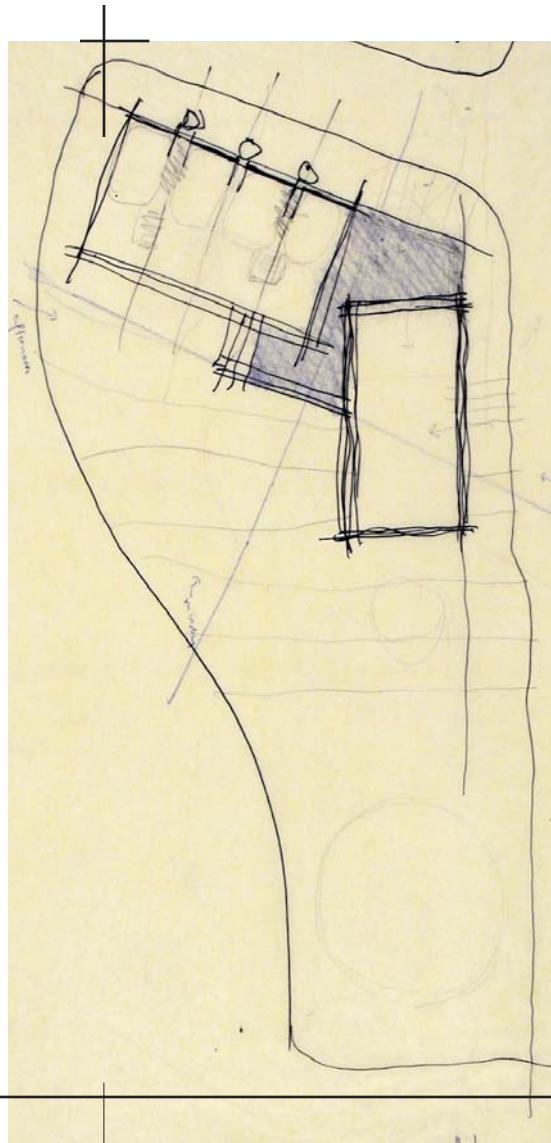


S I T E

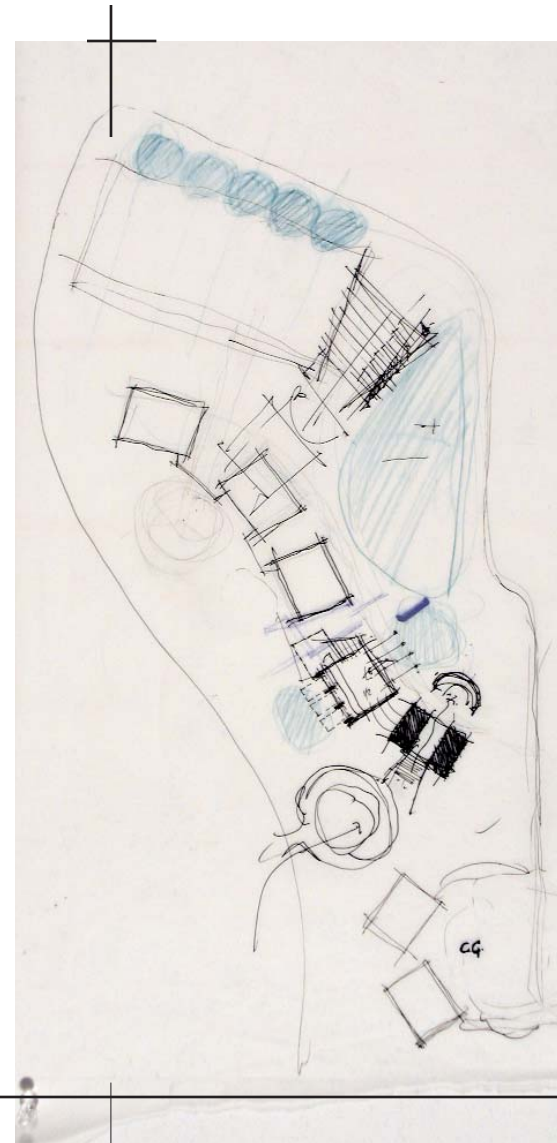


Change through perception was investigated through the arrangement of the programmatic elements of the school within the site. Various combinations of program placement were investigated with attention paid to the student's movements within the site over the course of the day, and the interaction of the site with the urban and natural context. Ultimately, the arrangement with the entry and exit to the complex at the top of the site, the main classrooms in the middle, and the Eurythmy room at the bottom was decid-

ed upon. With this arrangement, each student traveled along the circulation spine twice each day, to and from their Eurythmy class, passing each grade along the way. The intent of this arrangement was to be able to see the activities of each of the other classes and recall the lessons from past grades and preview the grades to come. Contextually, the buildings form an urban edge at the city side and a permeable edge at the park side. The two meet at the out-

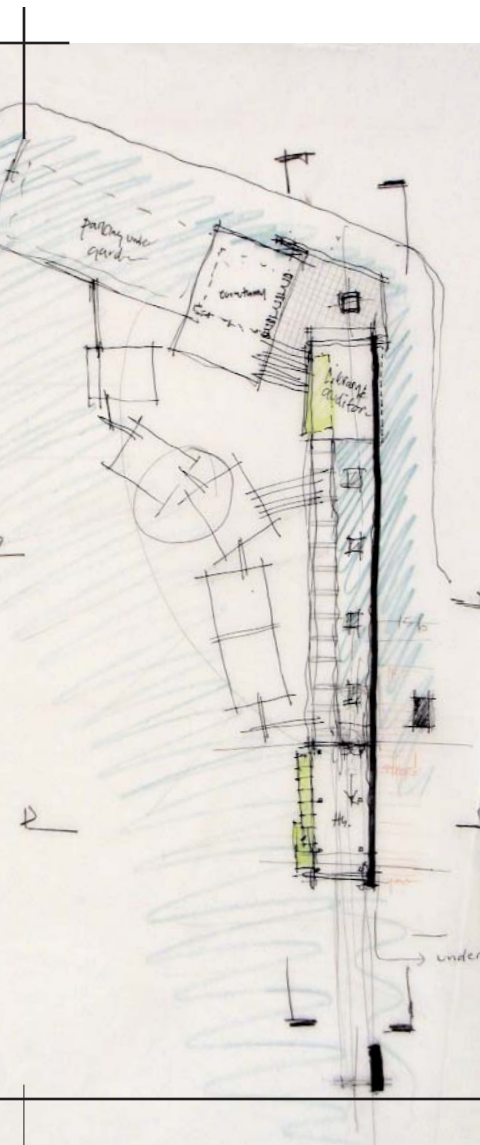


corner gathering concept



arrangement concept 1

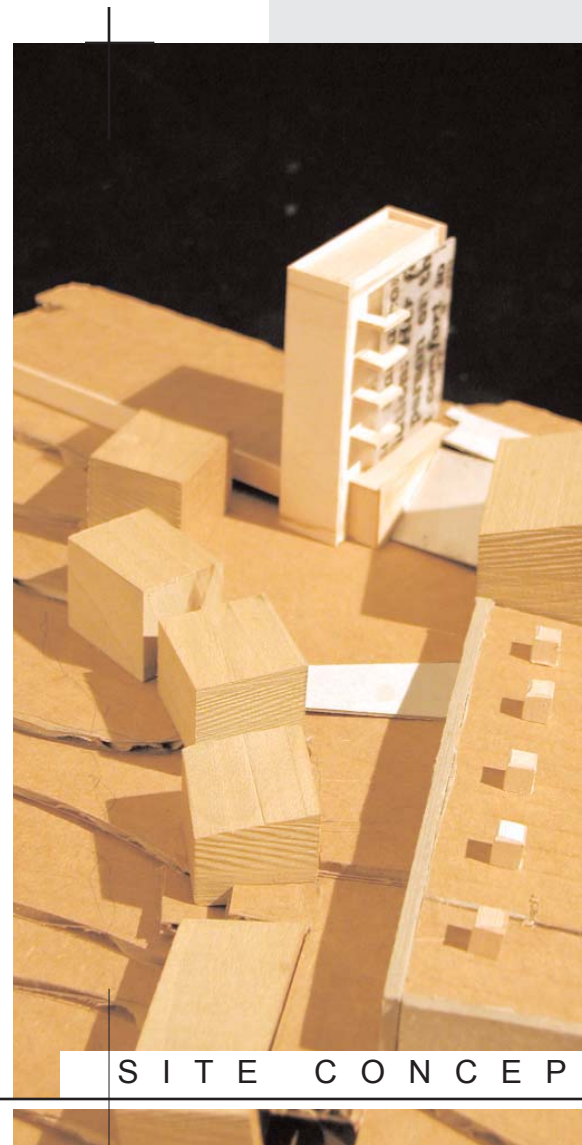




arrangement concept 2

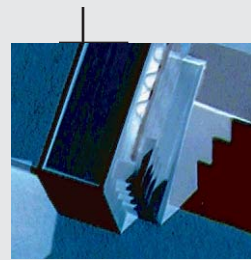


arrangement concept 2 - study model



S I T E   C O N C E P T S

arrangement concept 2 - study model

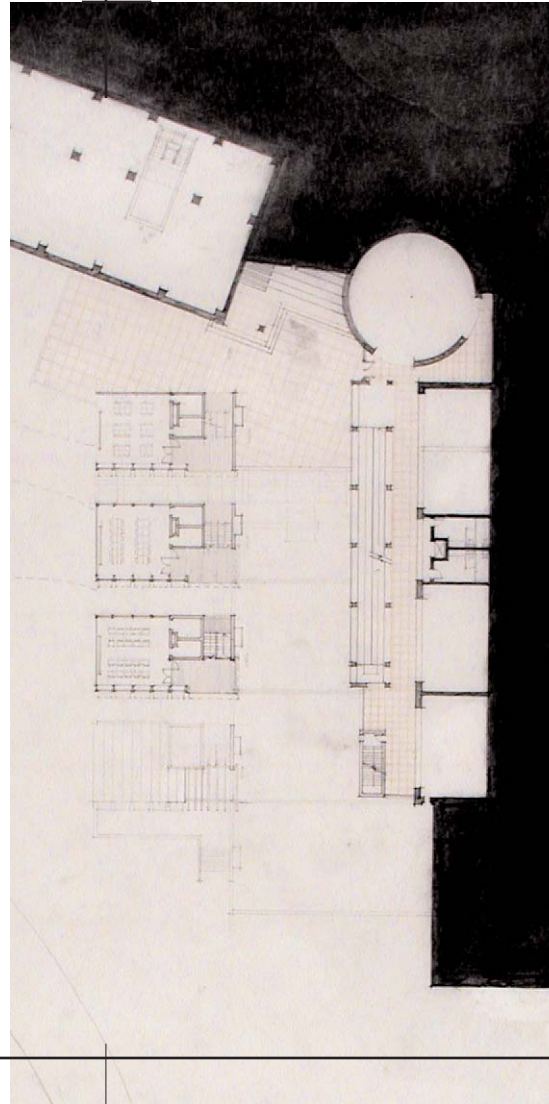


door amphitheater near the corner of the site, which provides a location for the school to have festivals integral to the educational philosophy as well as a location to view the park from the urban edge.

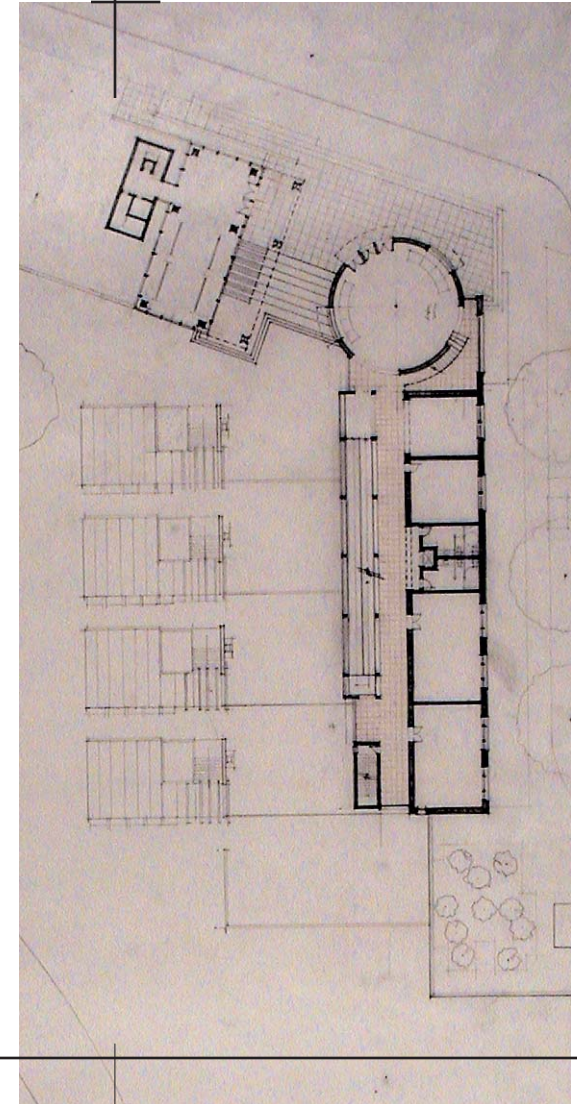
The Children's Garden is located at the top of the site, near the drop-off and the activity of the city. This provides the children with opportunities to observe the daily activities of the city and learn from them. The children's garden also has a private play yard above

the underground parking garage. The garden is enclosed with a frosted glass wall that provides a changing backdrop for transplanted crepe myrtles.

The Lower School is located in smaller pavilions. As part of the Waldorf Method, Lower School teachers stay with the same class for all eight grades, becoming 'experts in the child.' Each of these classrooms is intended to be used by the same class for

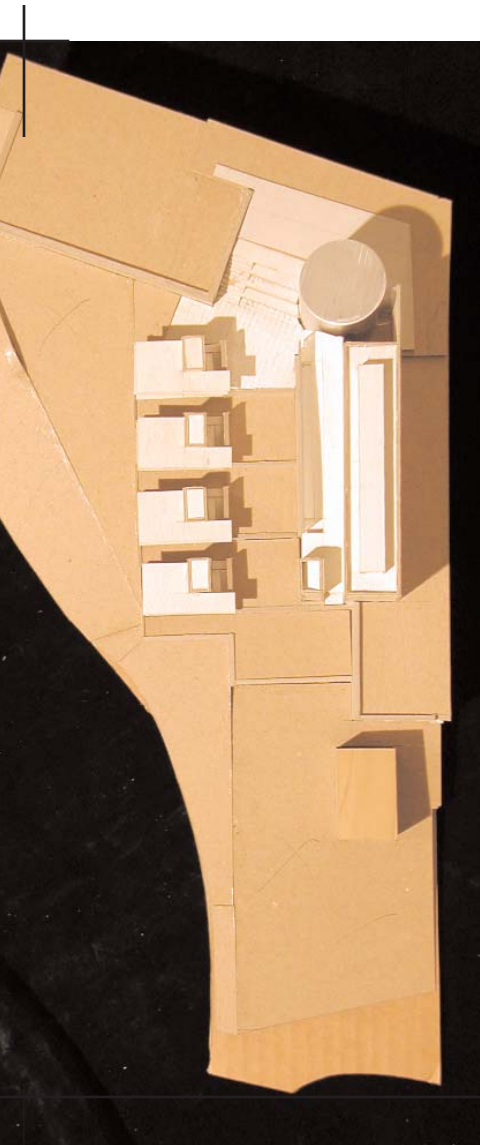


arrangement concept 3 - lower level

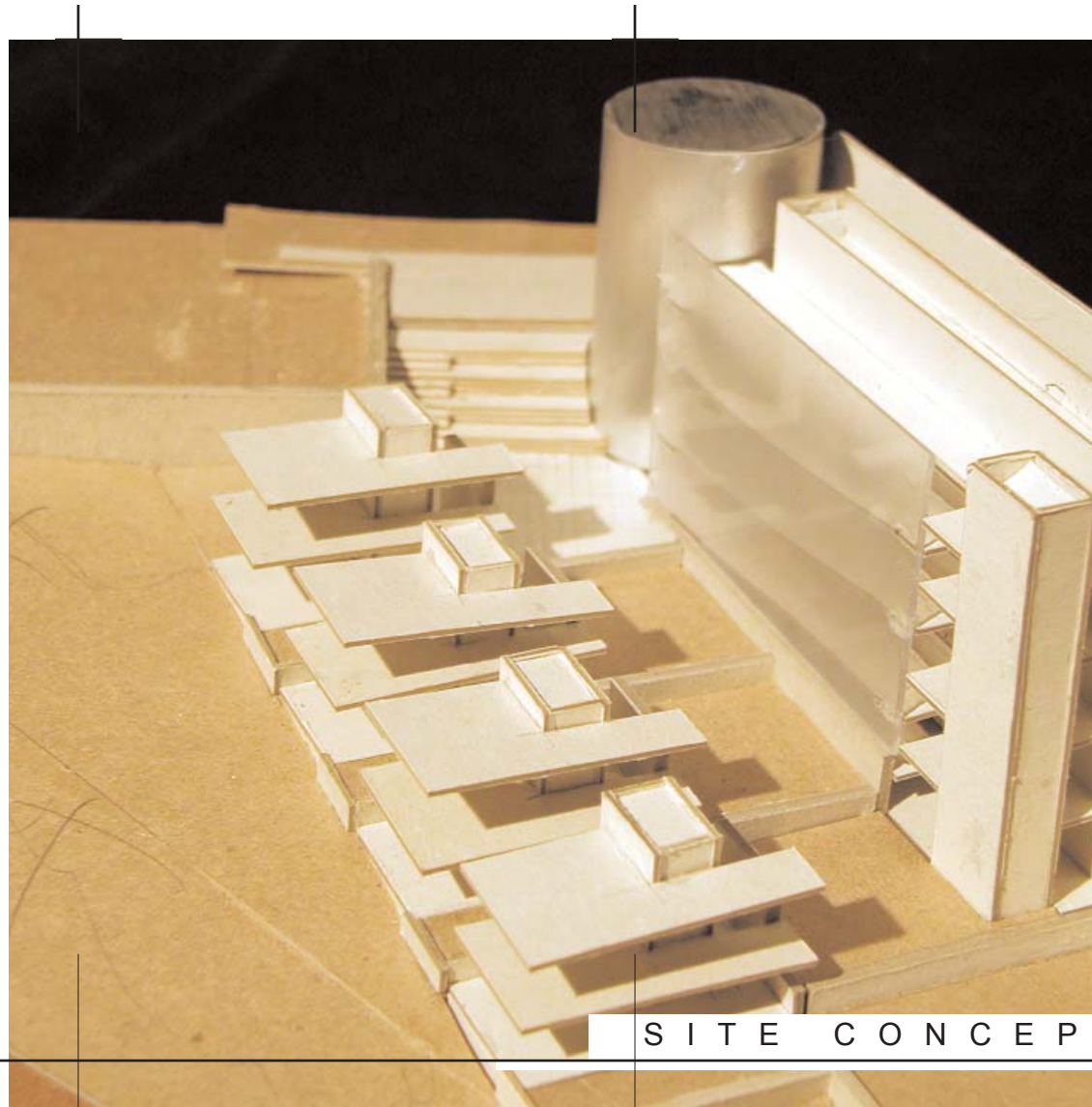


arrangement concept 3 - upper level



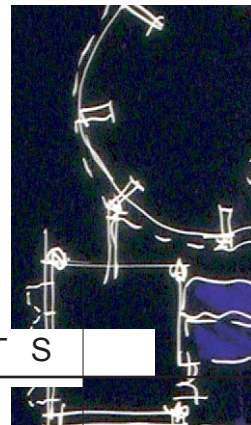
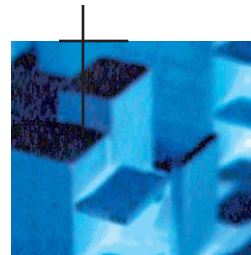


arrangement concept 3 - study model



arrangement concept 3 - study model

S I T E C O N C E P T S



all eight years so that students can witness the seasonal changes within the same architectural setting for eight years. The arrangement of the Lower School's pavilions encloses and protects four terraced educational gardens.

Across the gardens, along the urban edge of Connecticut Avenue, is the main school building which houses common classrooms, the library, administration, and the Upper School classroom. The Waldorf Method

believes that Upper School students learn best through independent learning. To reinforce this, the Upper School's main circulation is composed of a 'changing hall' and the slow + rapid stair. These two elements give the students the ability to manipulate the space formed by the hall and the classroom to suit the needs of the lesson and the activities of the day, and to provide a varied experience as they move through the building.



site model

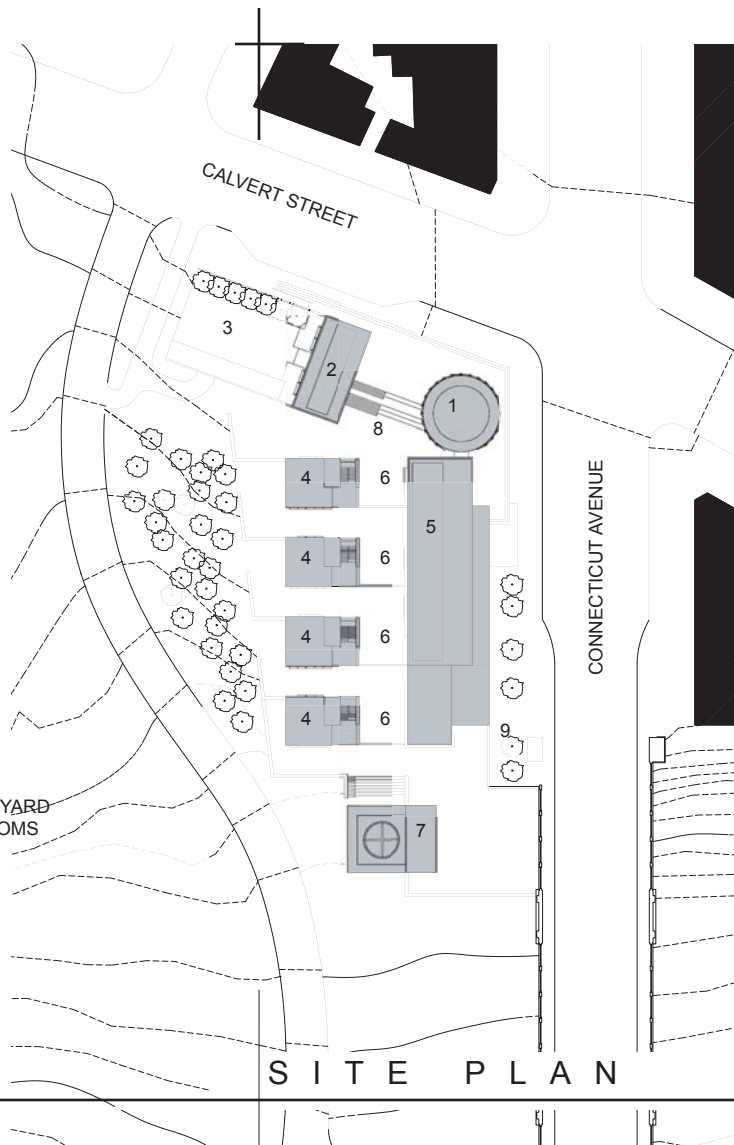


site model

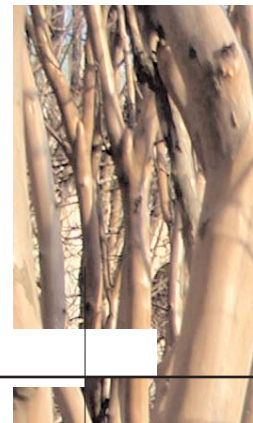
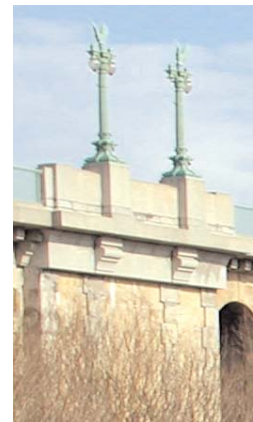




- 1 ENTRY / LIBRARY
- 2 CHILDRENS GARDEN
- 3 CHILDRENS GARDEN PLAY YARD
- 4 LOWER SCHOOL CLASSROOMS
- 5 UPPER SCHOOL
- 6 TEACHING GARDENS
- 7 EURYTHMY ROOM
- 8 AMPHITHEATER
- 9 LION BALCONY

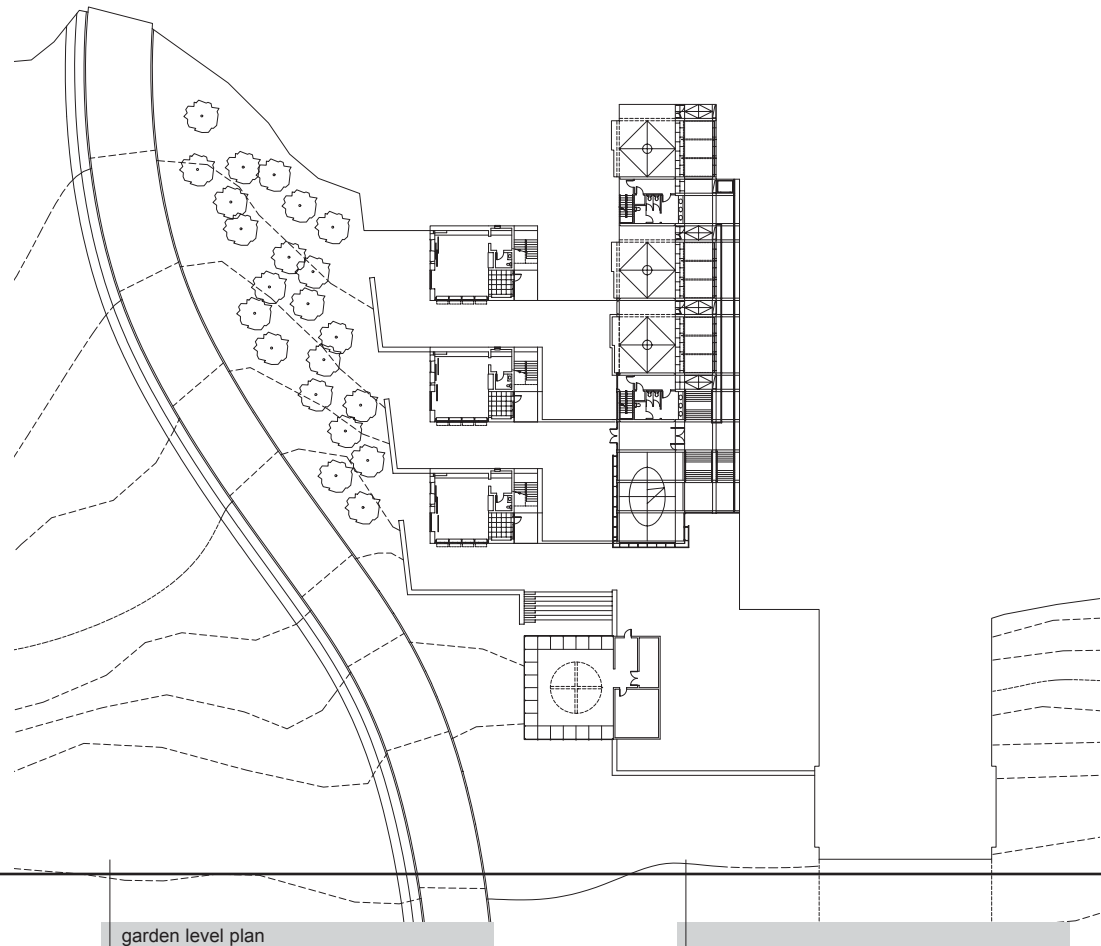


S I T E   P L A N

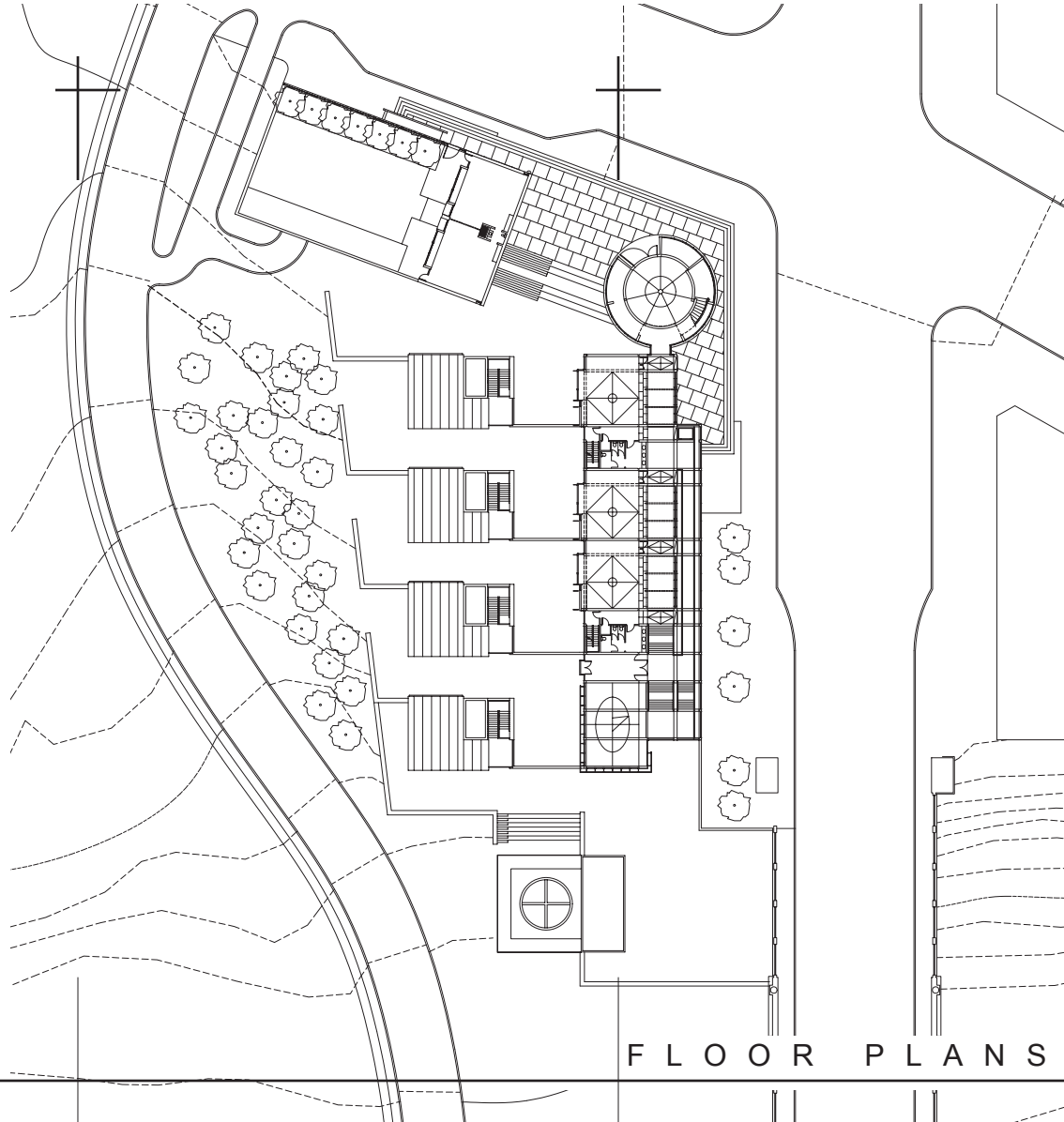


Quatremere de Quincy writes, "Rhythm is a measure of duration in time, that is to say, a measure that fixes the alternation of the slowness or rapidity of movements in an instrument or a voice, in the expression of sounds or words." (p. 242) He continues that the following produce rhythm in architecture that "corresponds to the varied effects that musical and poetic rhythms produce in the ear" (p. 242, 243):

- varied combinations of dimensions;
- intervals between parts;
- more or less alternating mixture of their projections;
- effects of their repetitions or their contrasts; and,
- smoothness or roughness of their contours or lines.

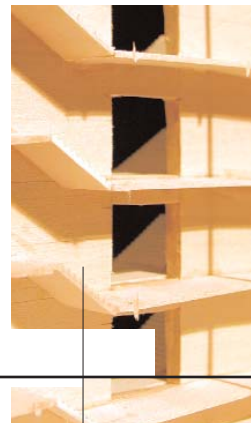
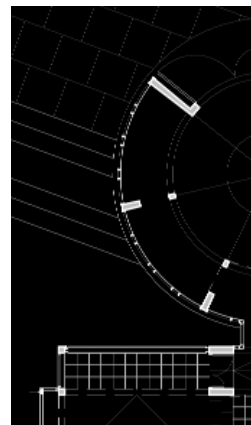
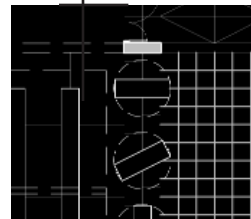




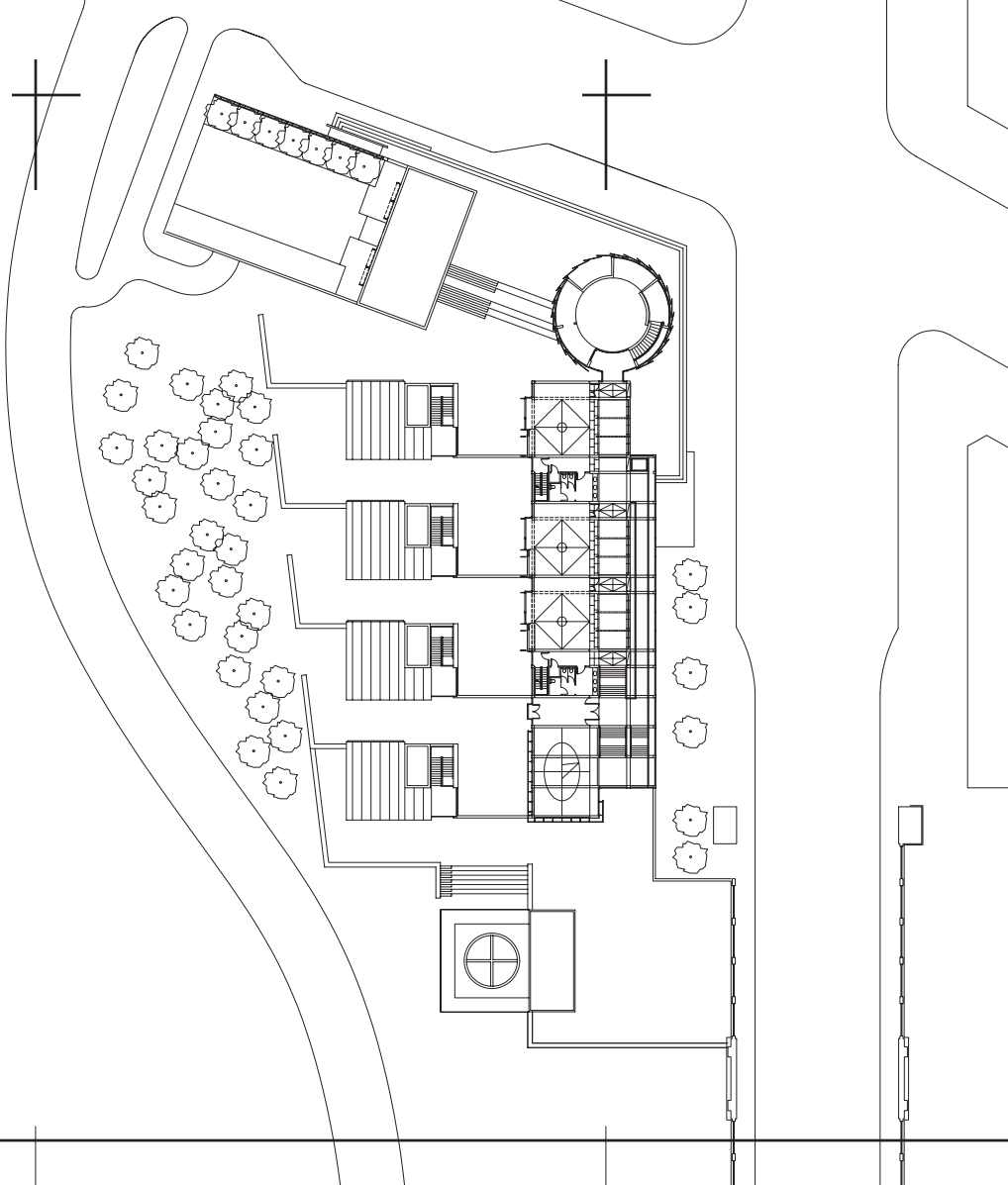


street level plan

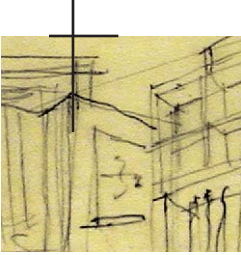
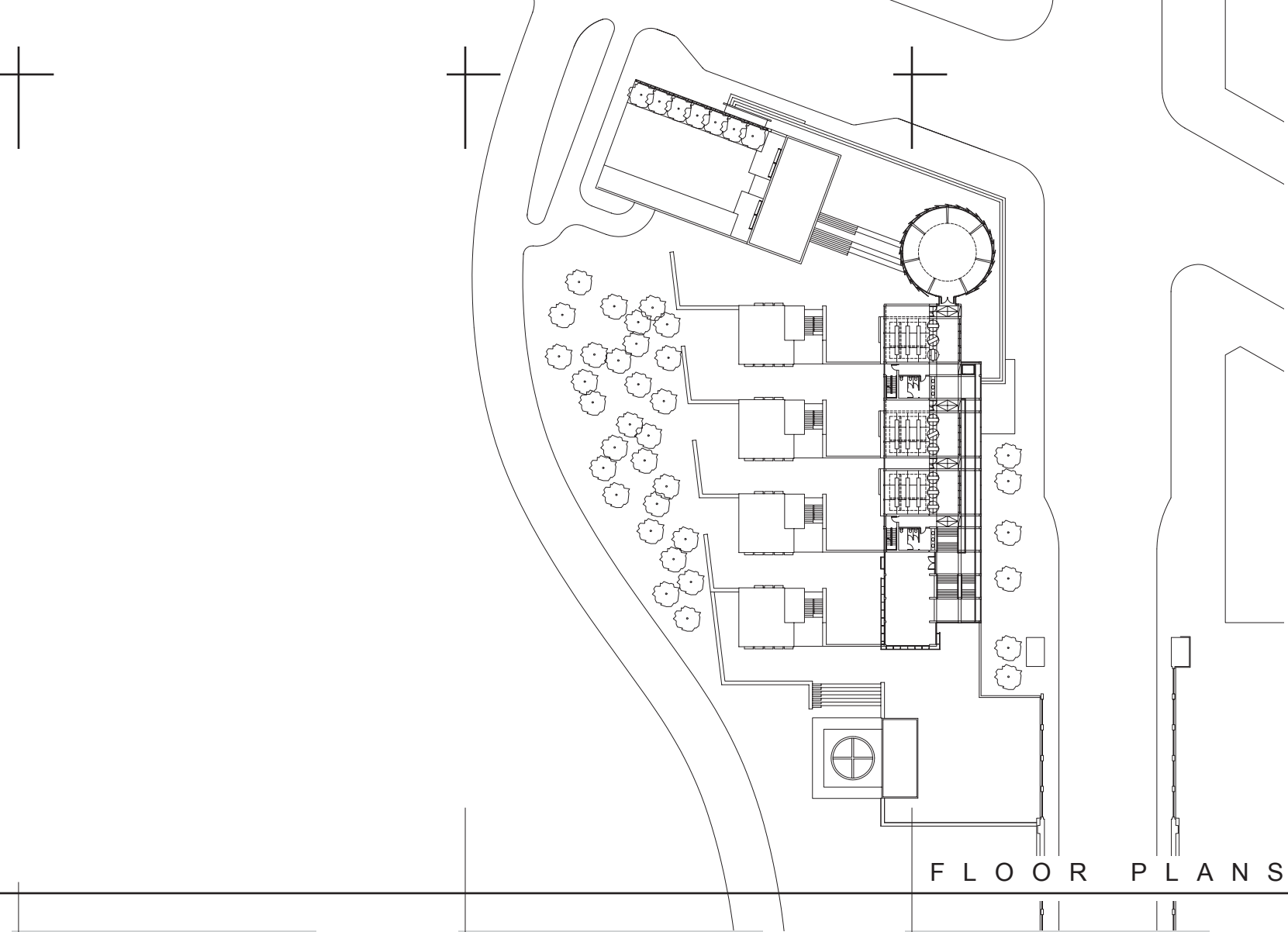
## FLOOR PLANS



The structure of the building utilizes these ideas through the combination and repetition of the structural elements. The main structure is made of exposed, board-formed cast-in-place concrete, arranged in an A-B meter. The exposed structure allows a straightforward construction of the shell and provides a subtle backdrop for the activities and moveable partitions within the building. These moveable partitions provide varied combinations of intervals, projections, and contours that serve to animate the spaces.



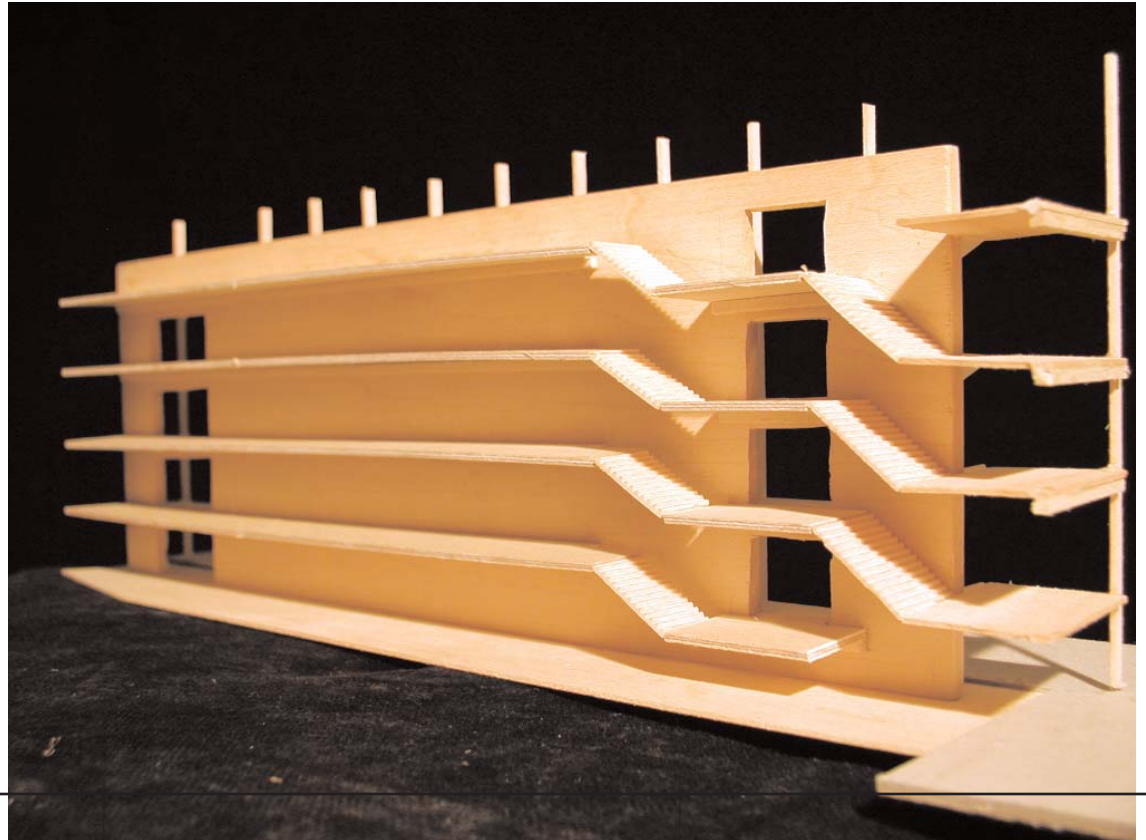
classroom level plan



FLOOR PLANS

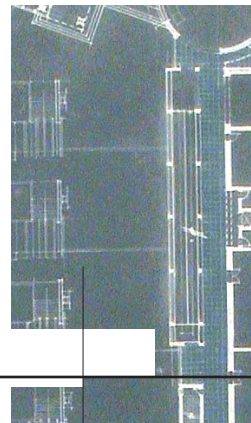
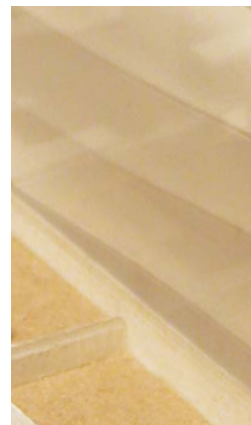
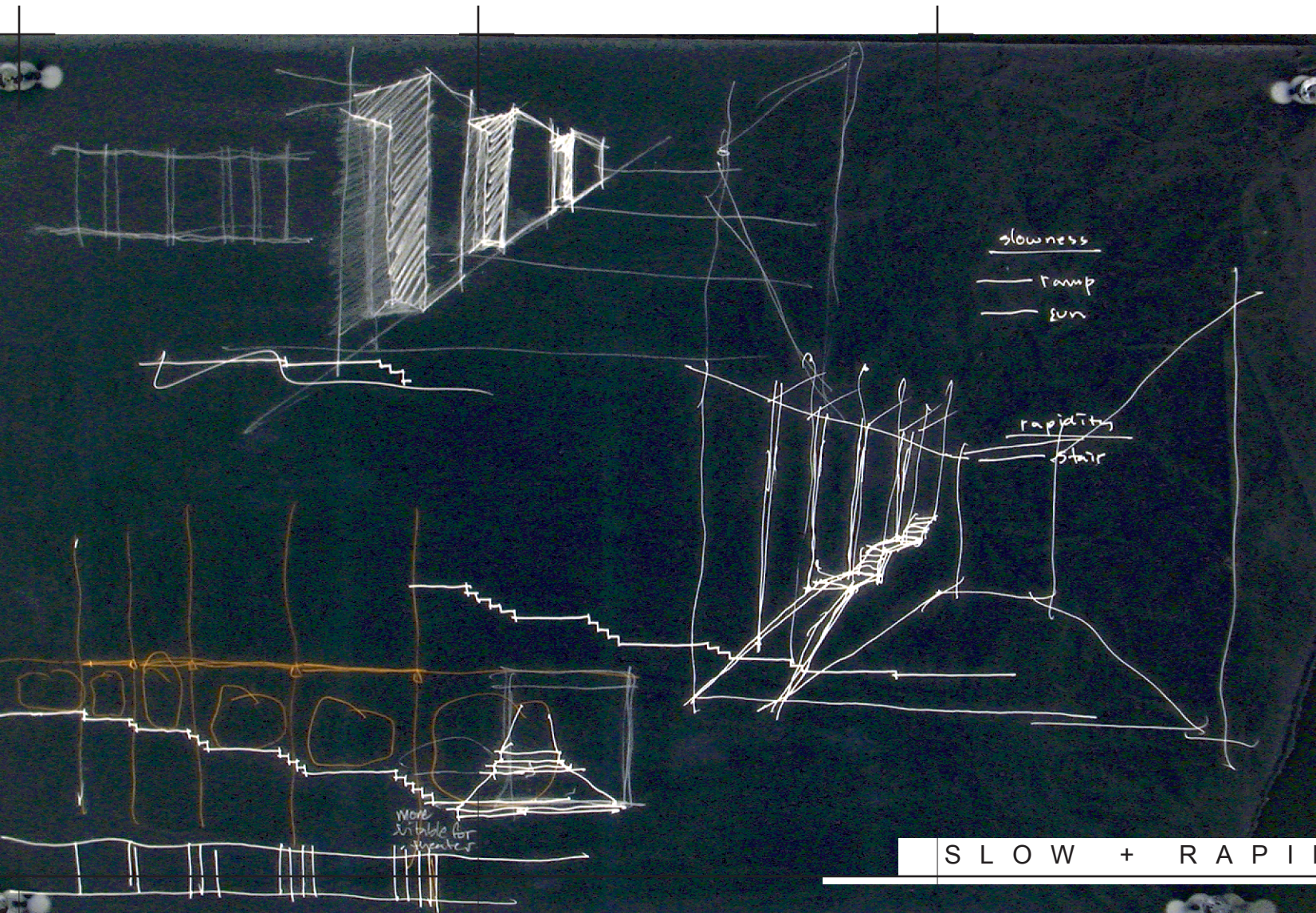
library level plan

In addition to the rhythmic structural grid, a 'slow and rapid' stair was designed to create a varied combination of ascent or descent. Students can use any combination of the ramp, interior stair, or full switchback stair, to move from floor to floor. This allows them to consciously select the manner in which they want to proceed through the building.

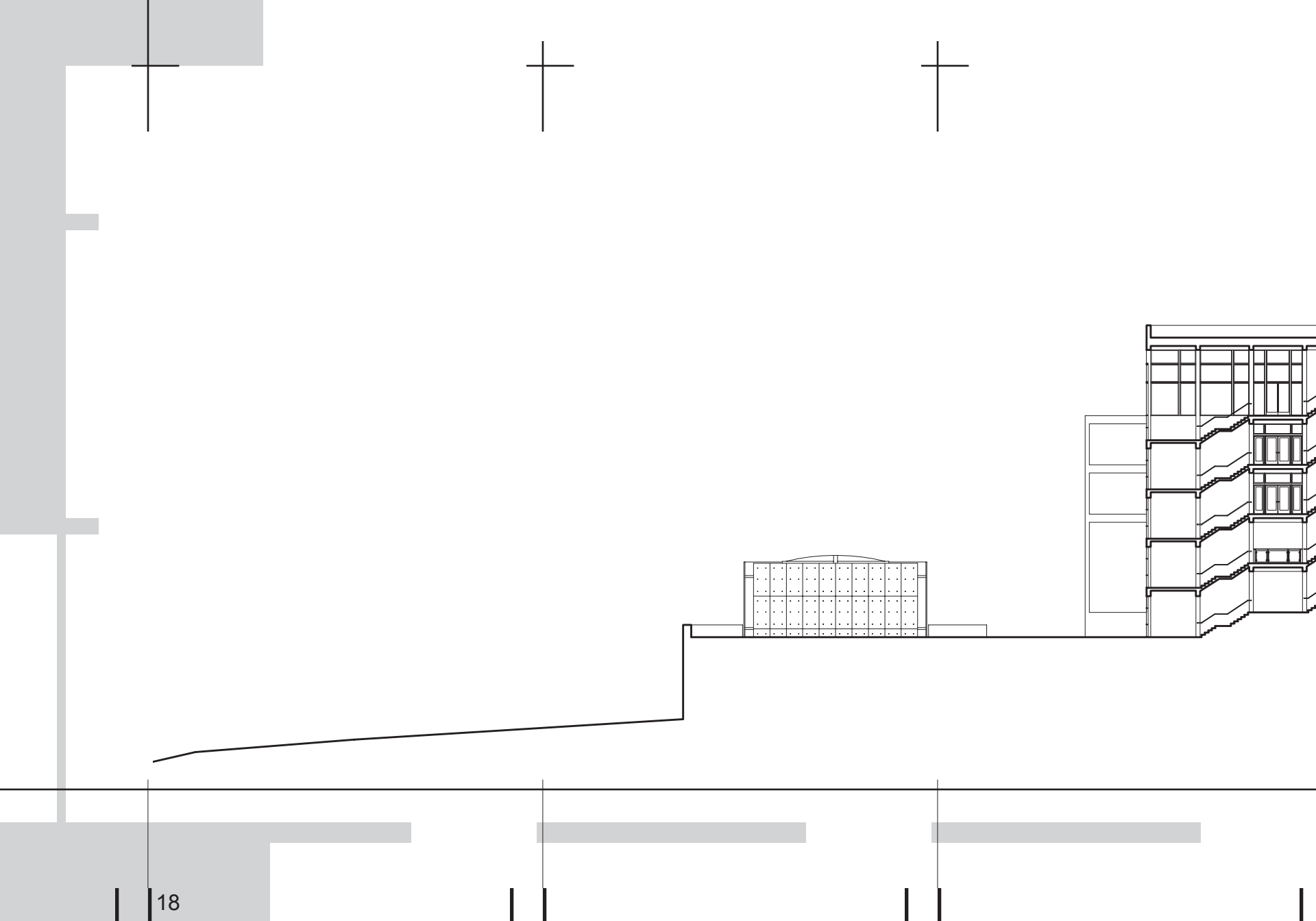


slow / rapid stair study model

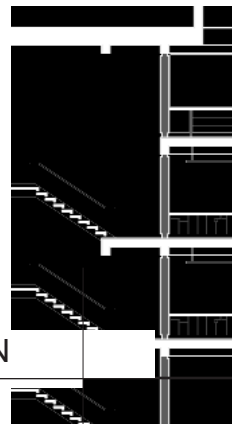
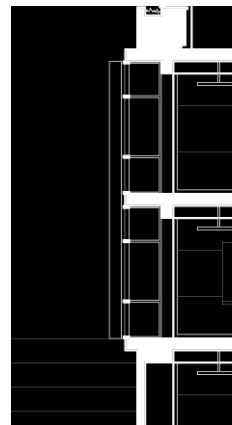
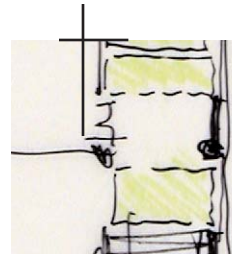
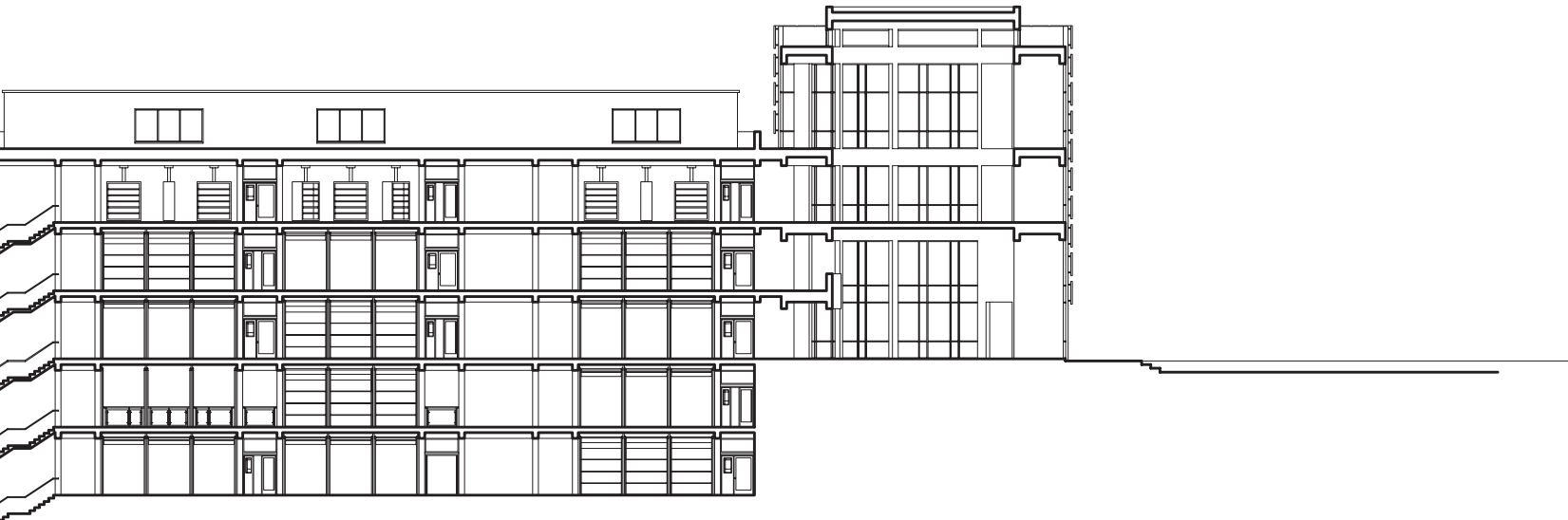




slow / rapid stair concept sketch

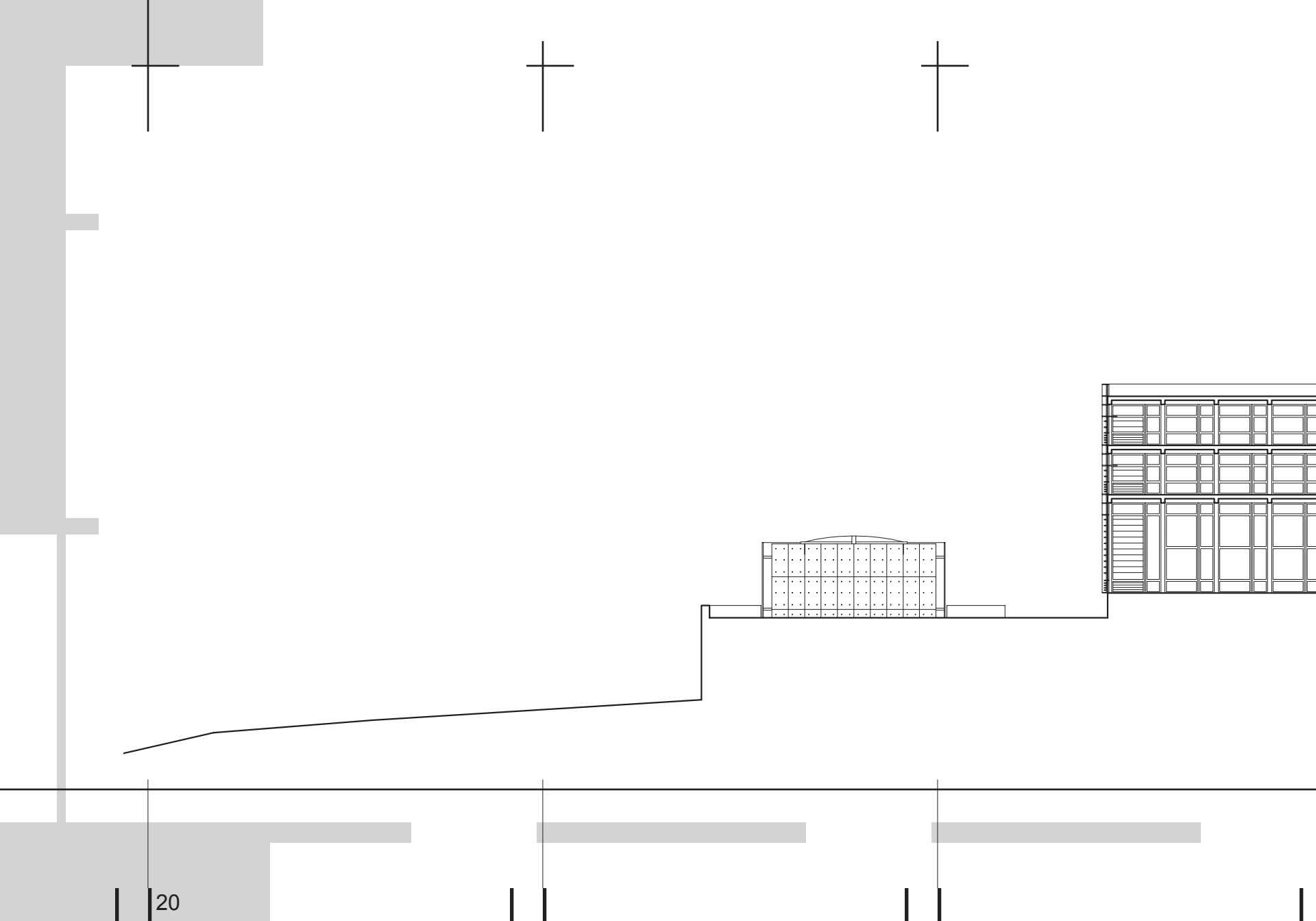


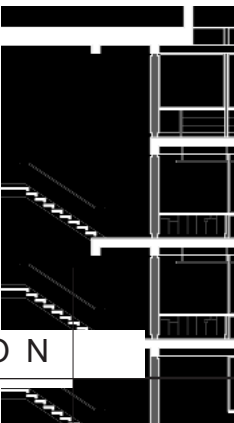
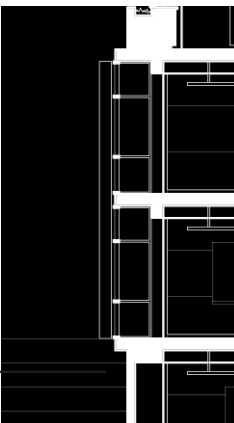
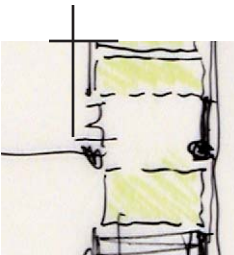
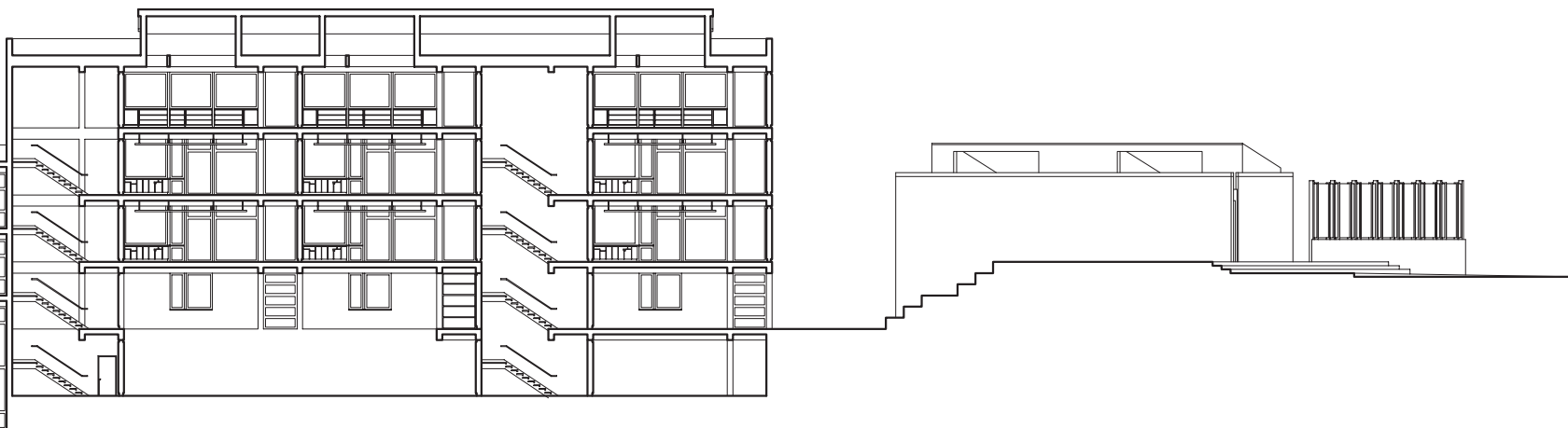




BUILDING SECTION



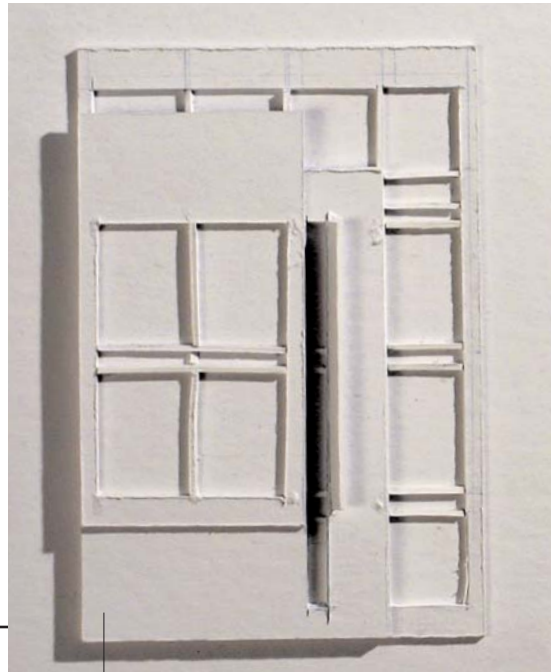




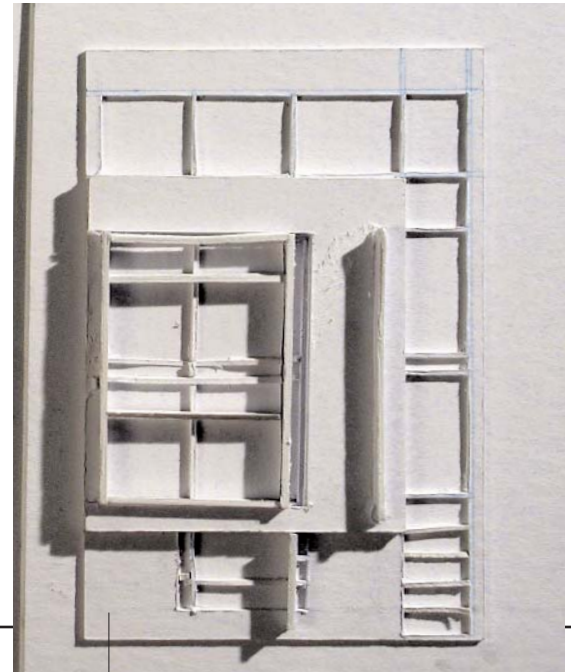
BUILDING SECTION

The main building provides a backdrop for the gardens and lower school. The first architectural support for the perception of change is the way the garden façade has been articulated to create a series of bay projections that will cast varied shadows upon the main building throughout the day. Two colored glass fins cast shadows across the vertical window and into the classrooms of the Upper School. The façade thus makes apparent the movement of the sun across the sky. Viewed from the Lower

School, the bay projections provide a means to track the progress of the sun over the seasons and begins to allow the cycles of nature to become part of the students understanding of the world around them.

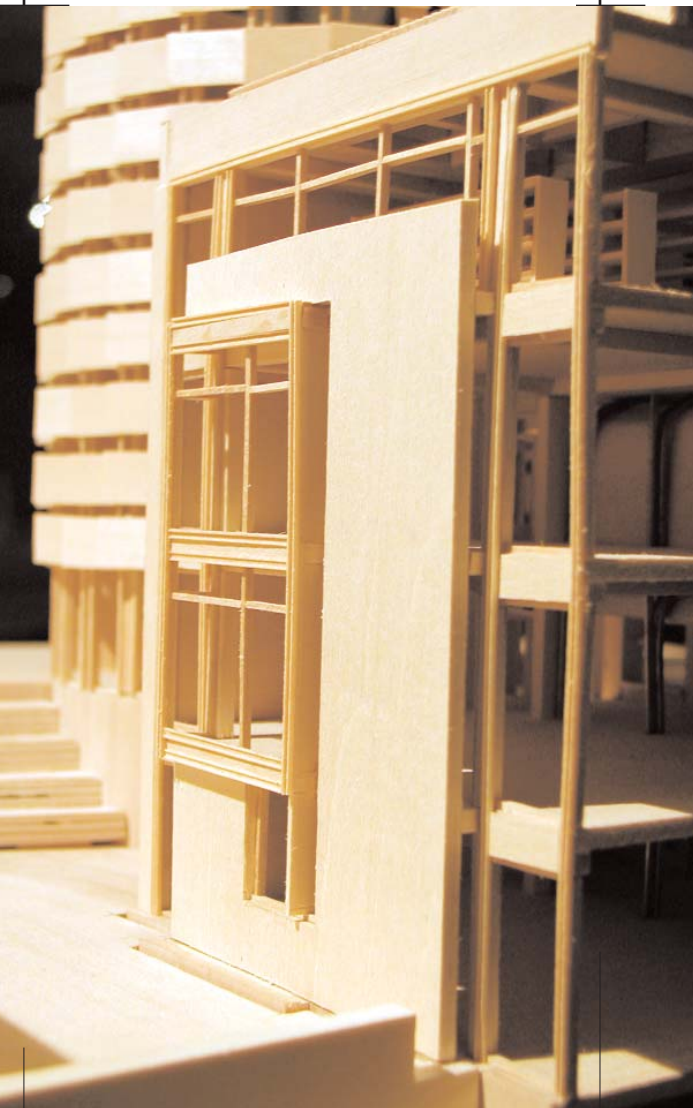


bay shadow study model

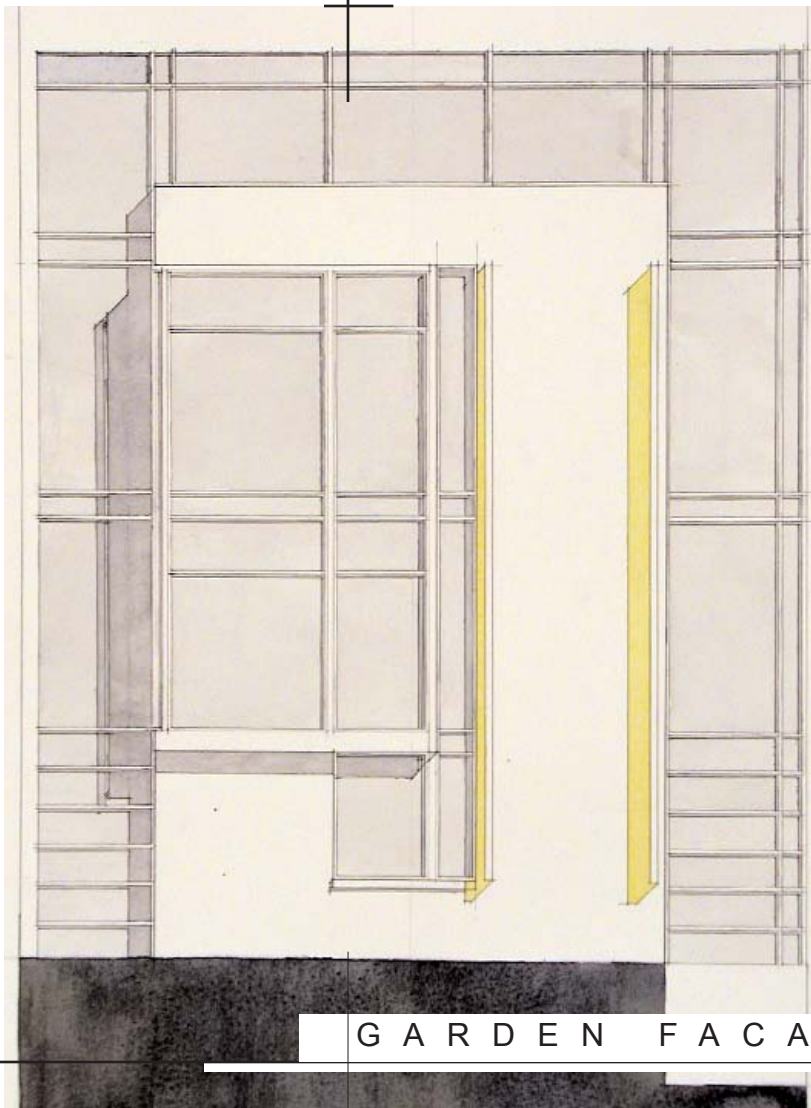


bay shadow study model

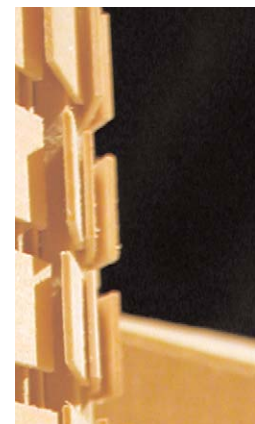
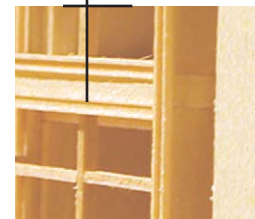


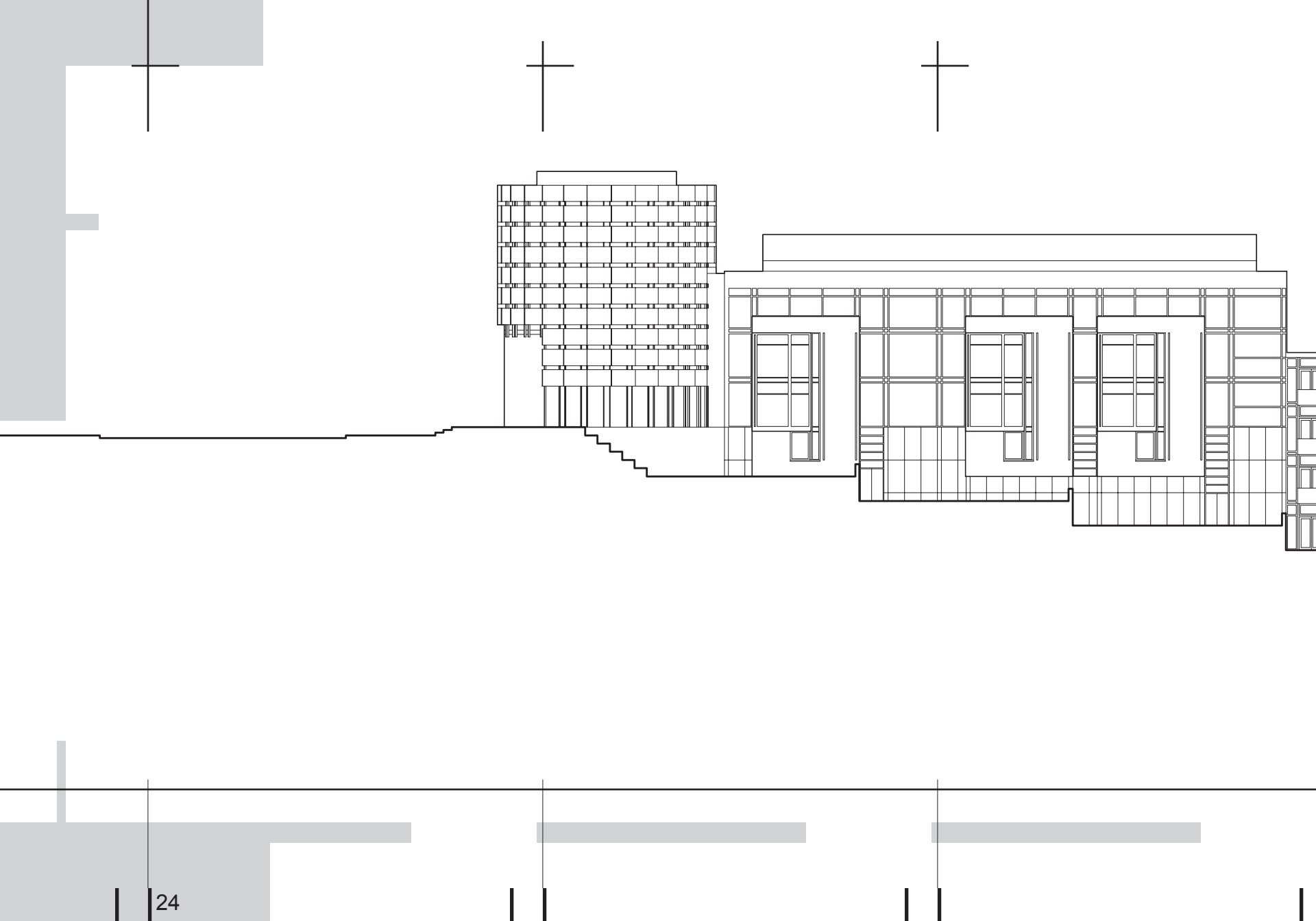


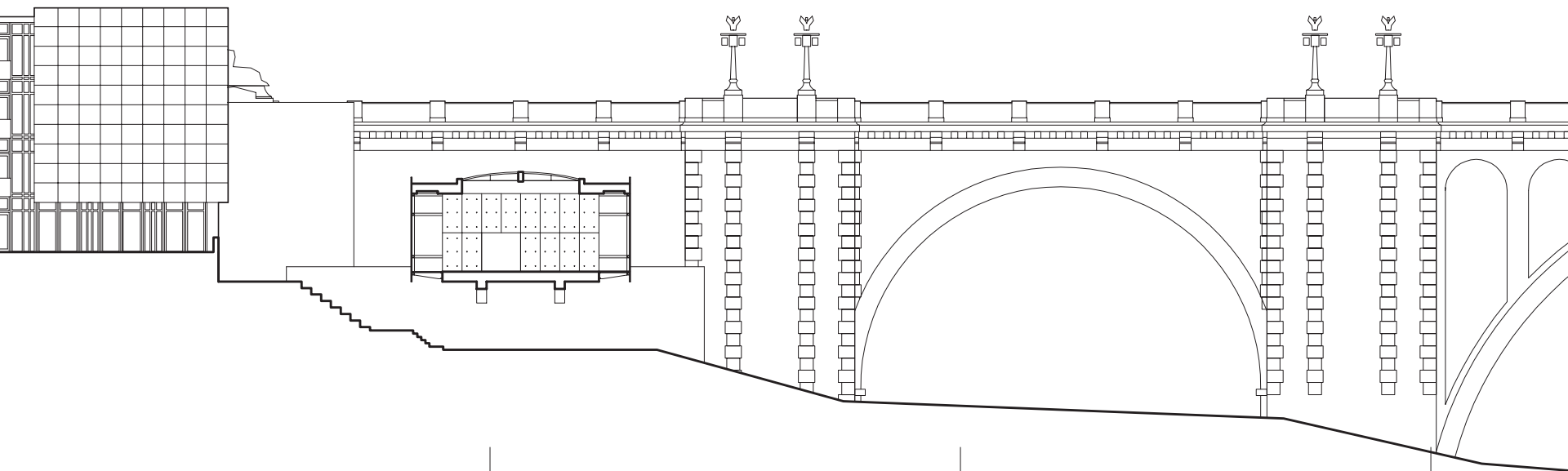
model



G A R D E N   F A C A D E





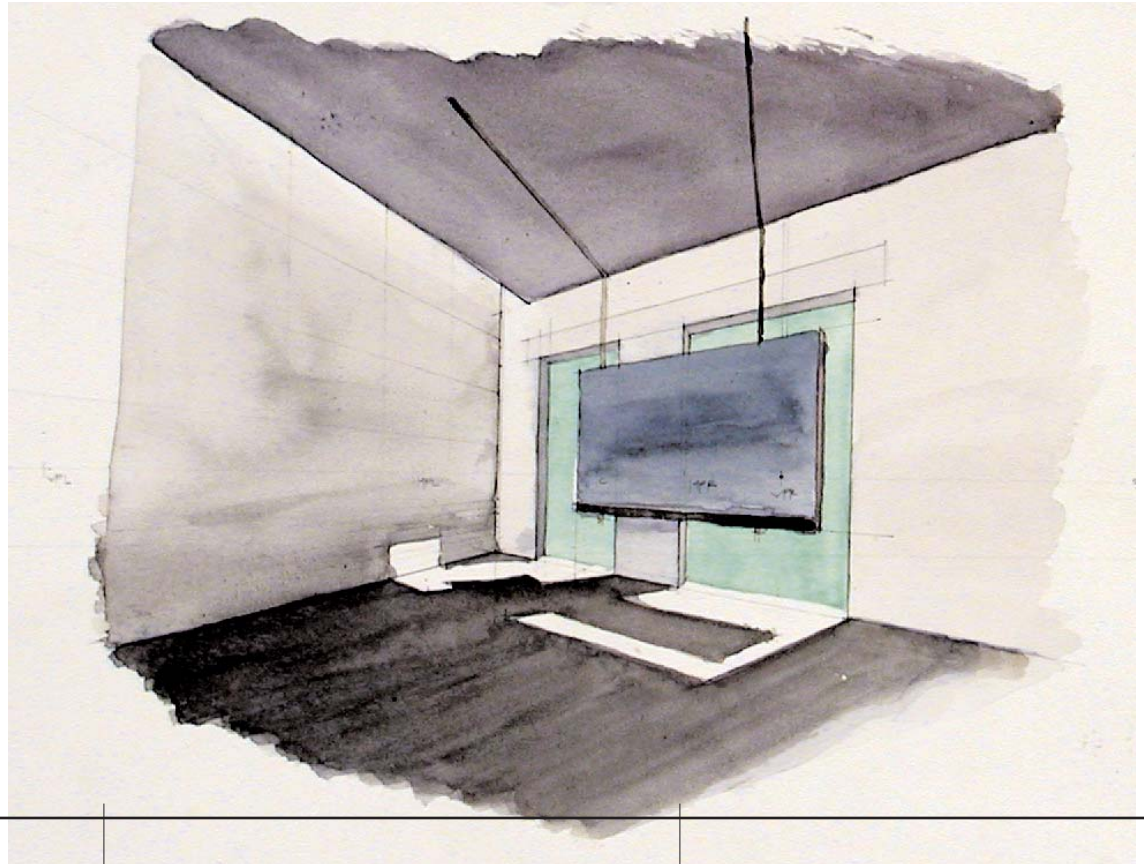


G A R D E N   F A C A D E

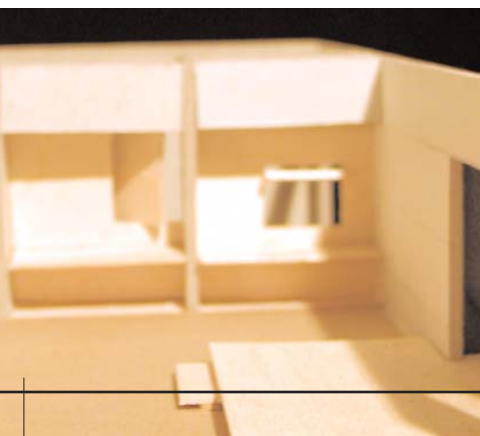
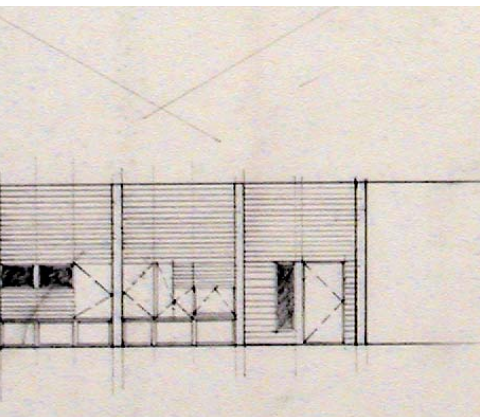


The second aspect of change that was investigated was how the building could function and be perceived in different ways through physical manipulation. In each classroom, the blackboard can move to partially cover the openings. This alters the shape and length of the shadows that are cast by the sun. Awareness of daily weather is heightened when students are able to respond architecturally. In addition, each classroom's partition opens and closes in different ways to create different amounts of

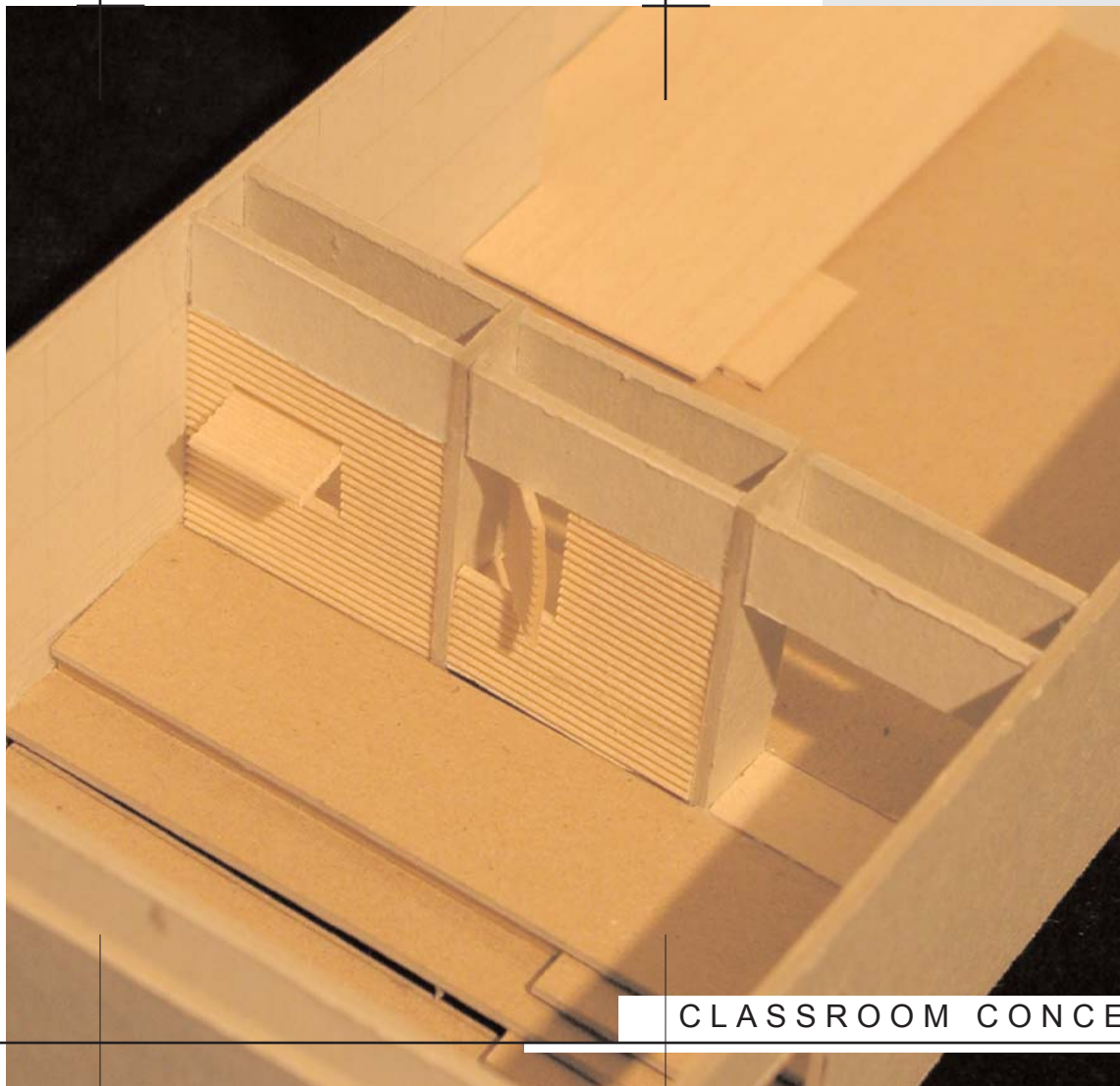
privacy and openness as needed for different activities. The partitions in this "Changing Hall" vary the rhythm and feel of the space within the consistent backdrop of the structure of the building.



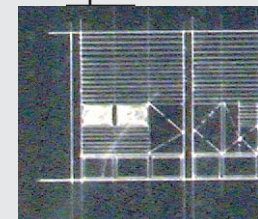
moveable blackboard concept drawing



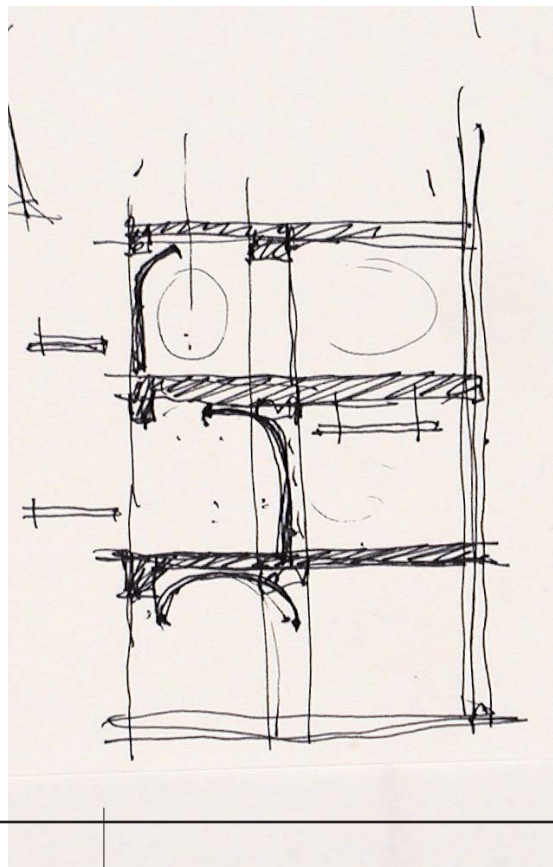
classroom study model & interior elevation



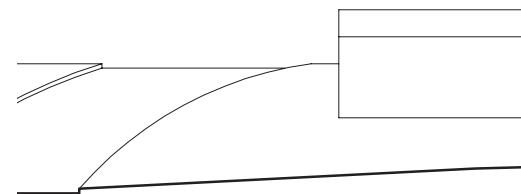
classroom study model



## CLASSROOM CONCEPTS

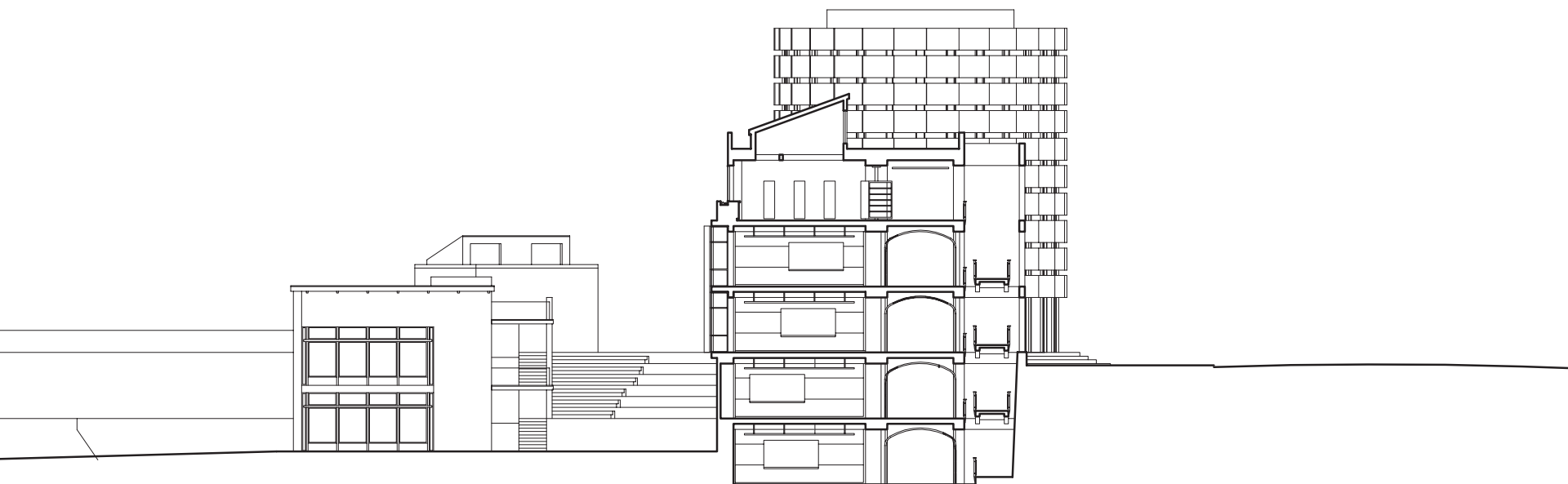


changing hall concept drawing

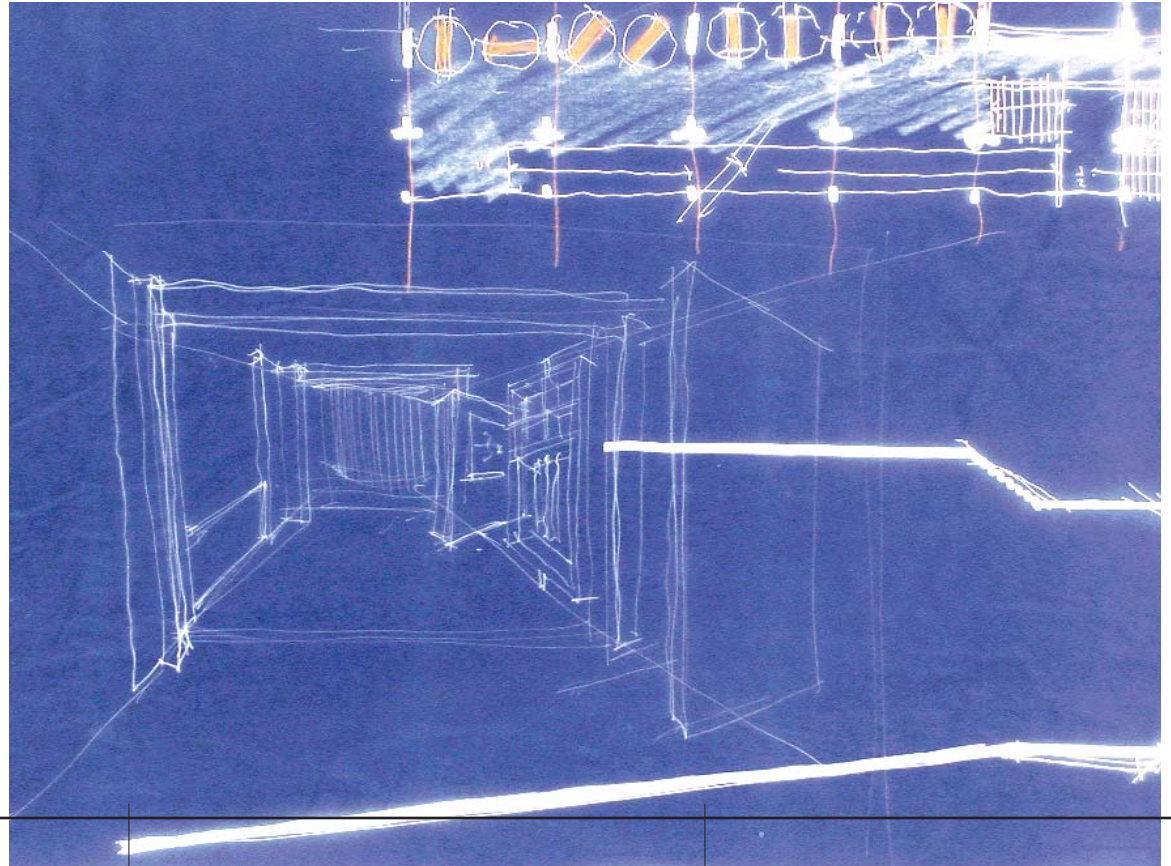


building section

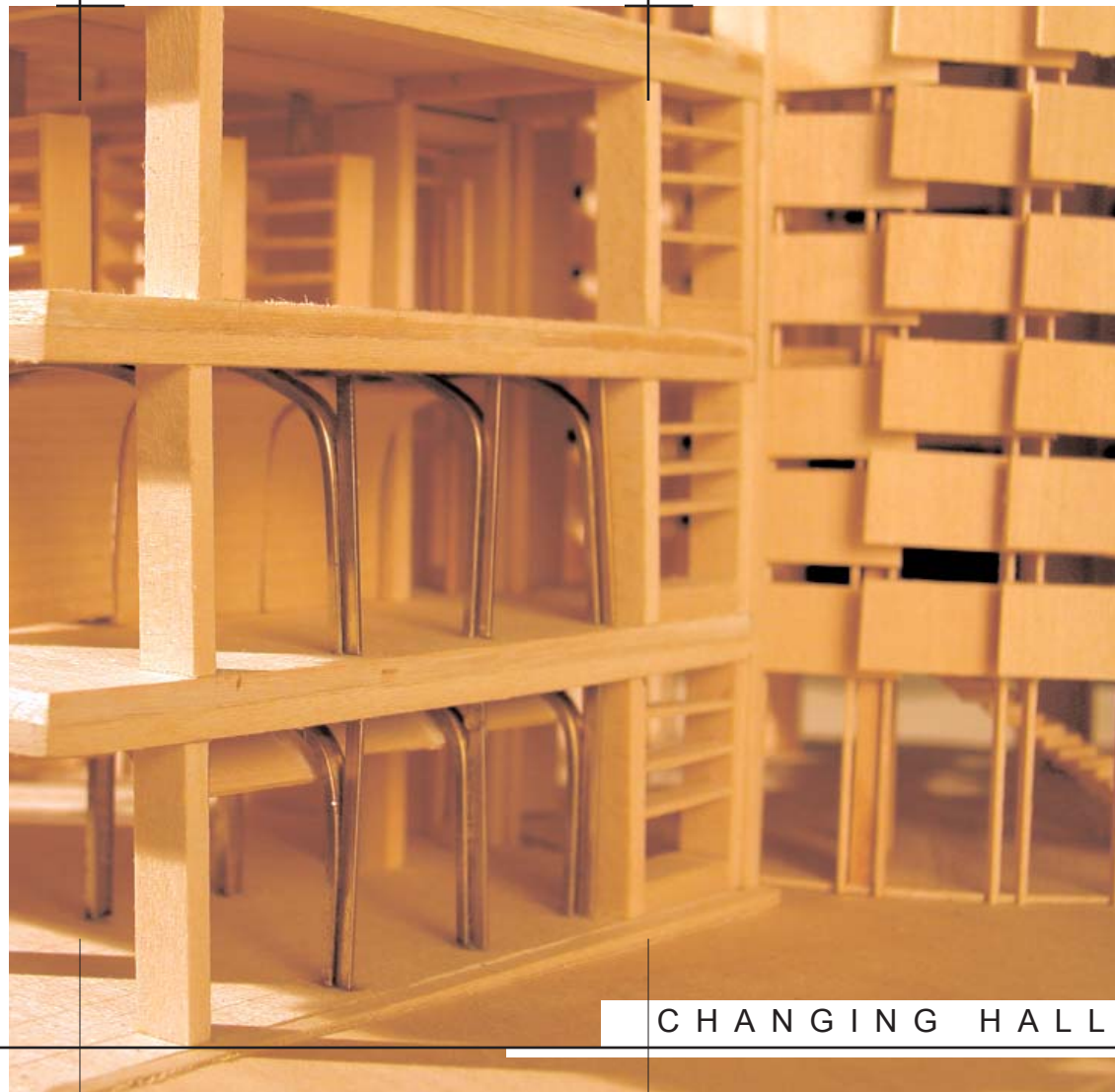




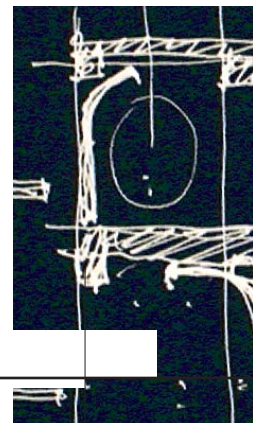
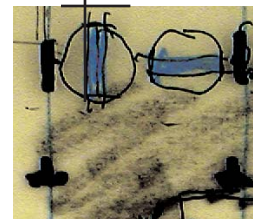
C H A N G I N G   H A L L



moveable wall concept sketch

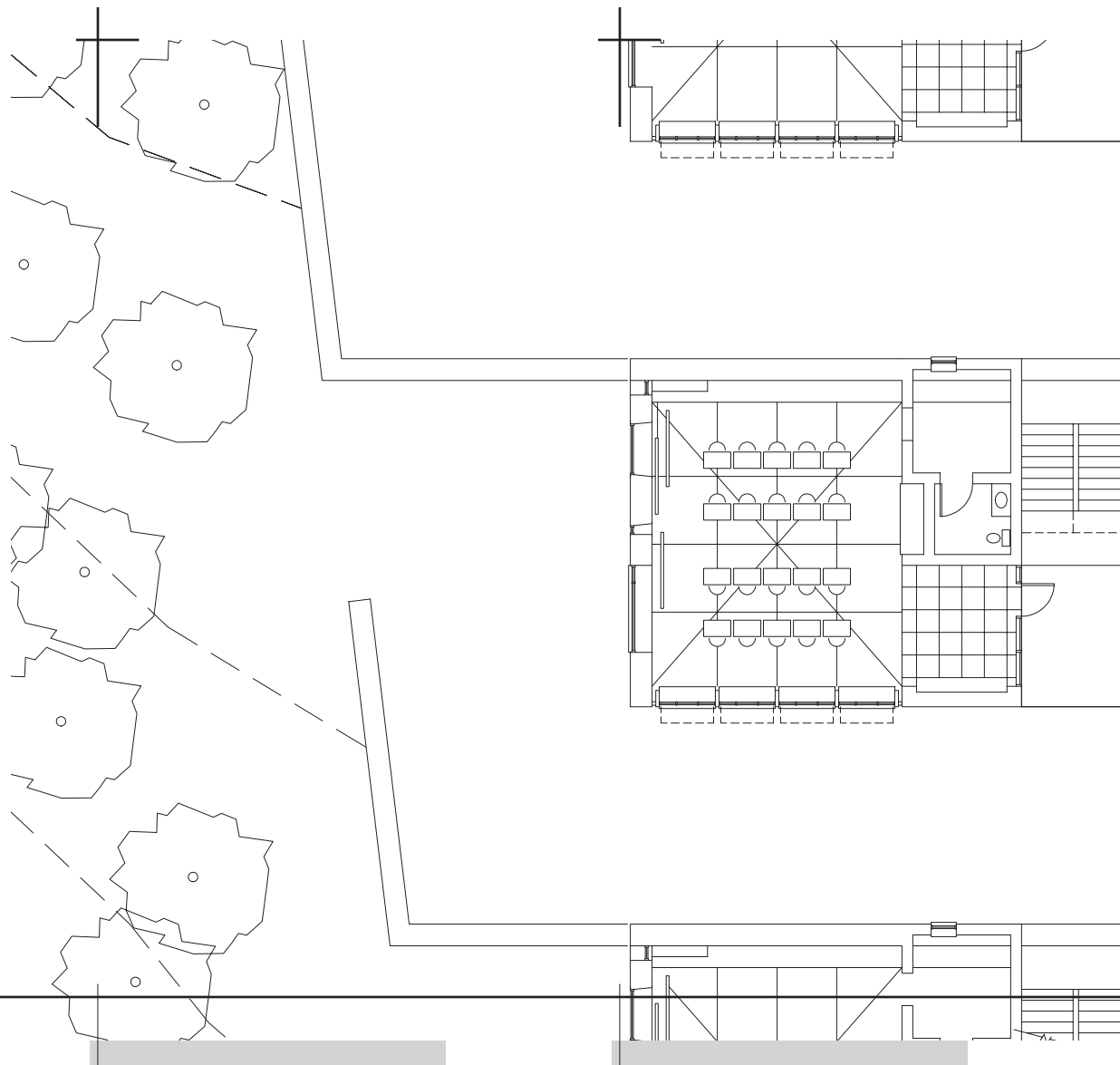


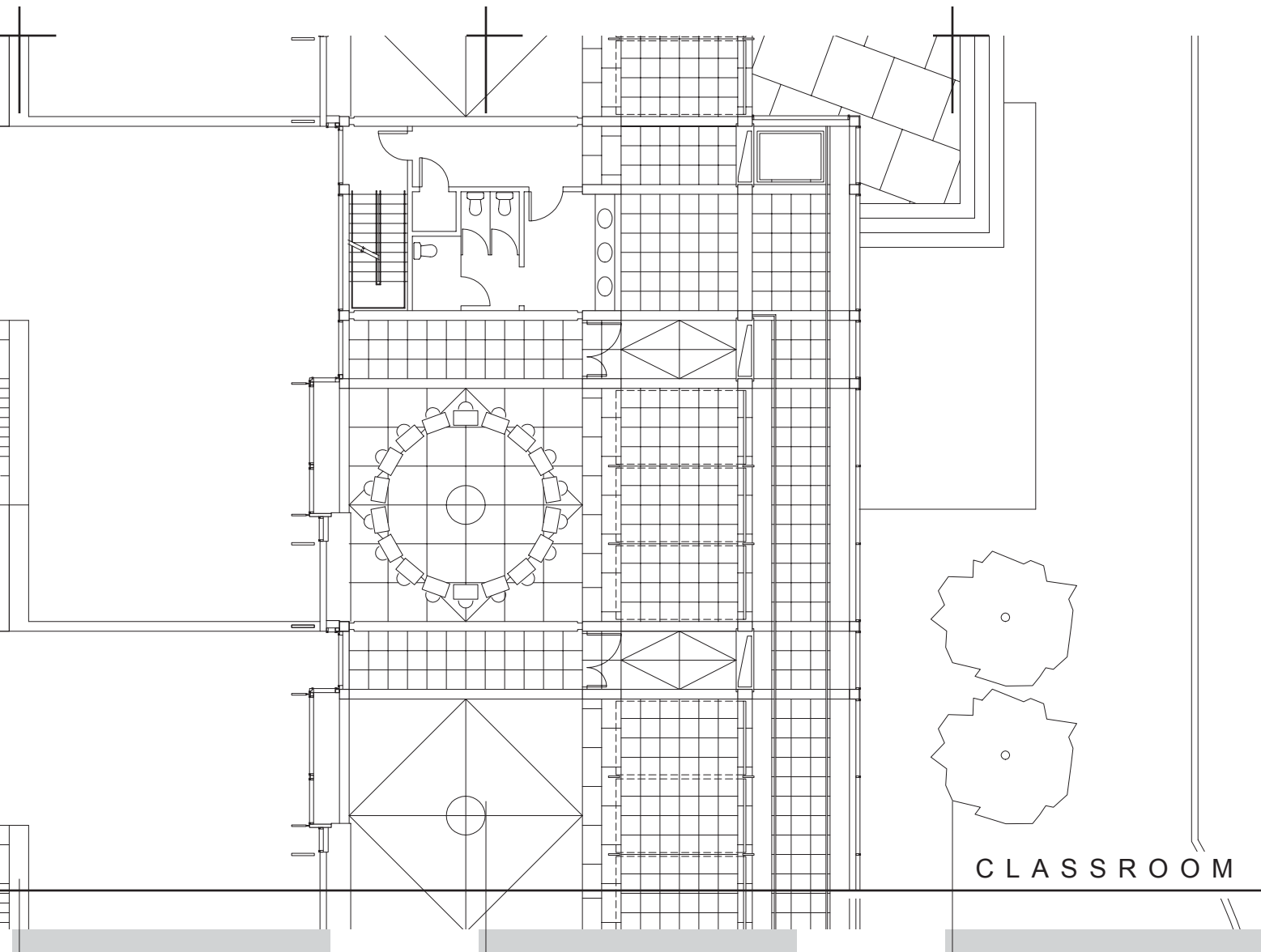
CHANGING HALL



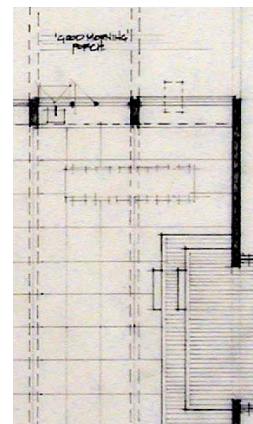
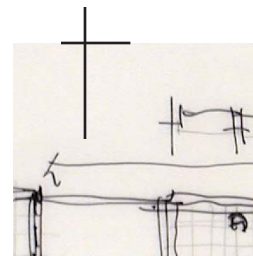


The geometric floor pattern in each class-room provides the students and the teacher with a guide for arranging the furniture in different configurations for different types of activities. Participating in the arrangement of the space, students learn how their bodies relate to each other and the building.



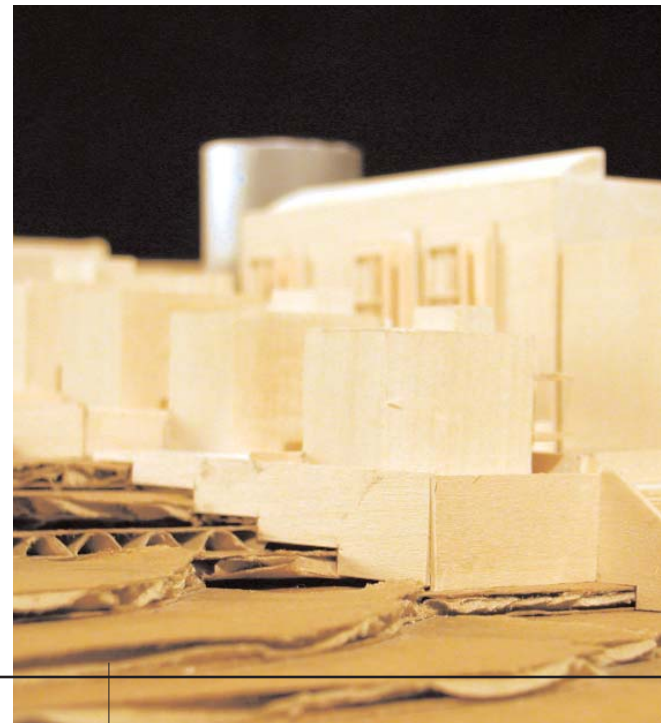
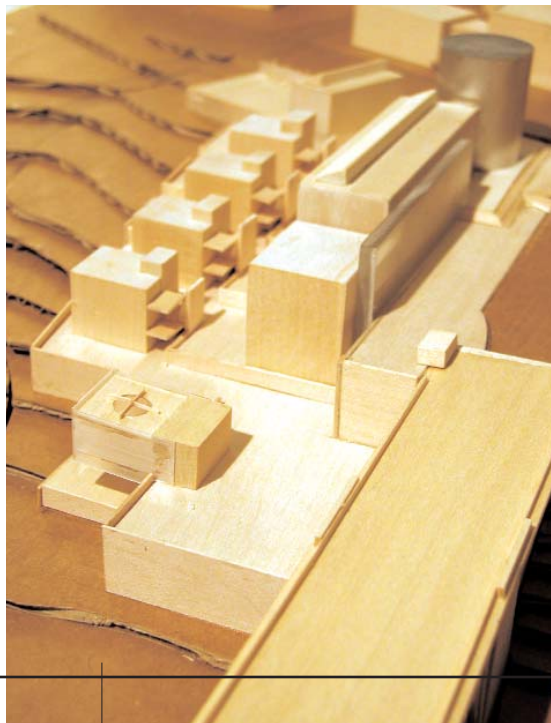


CLASSROOM PLAN

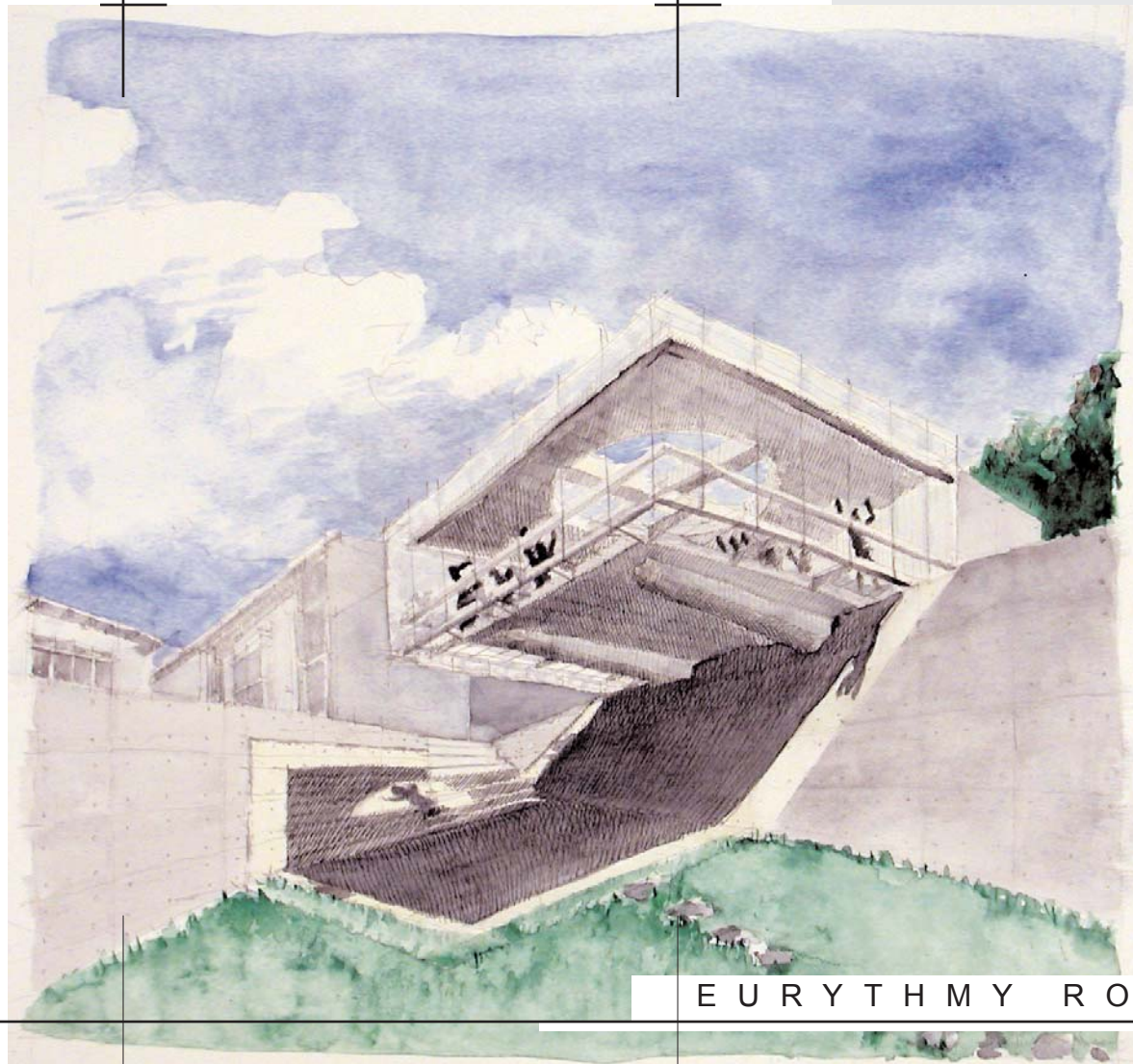


The final method of change that was investigated was the way materials change in reaction to the environment. Two types of sheathing were investigated - frosted glass and bimetallic panels. The Eurythmy Room at the bottom of the site and the wall enclosing the Children's Garden are constructed of frosted glass. On sunny days, the frosted glass displays the shadows of the students and the crepe myrtles. On rainy days, as the wet frosted glass becomes more transparent, the movements of the students

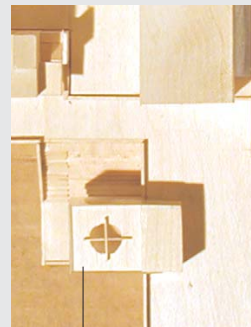
and crepe myrtles are revealed.

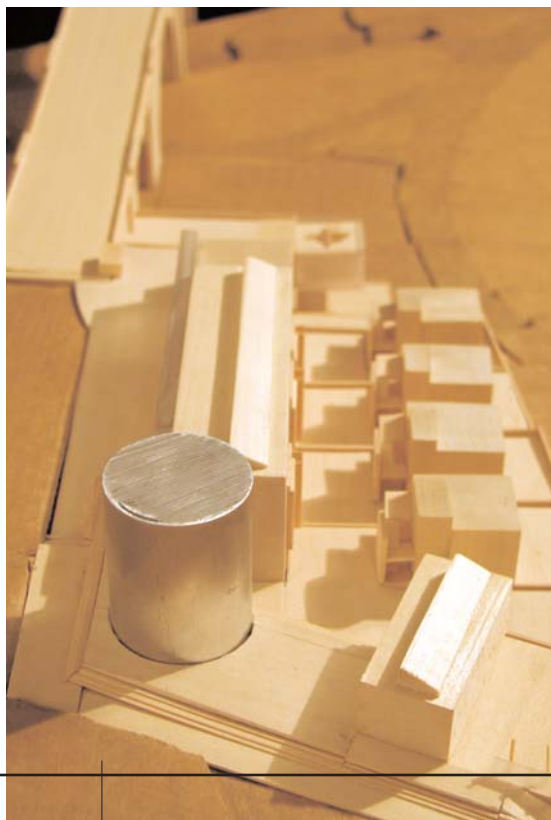




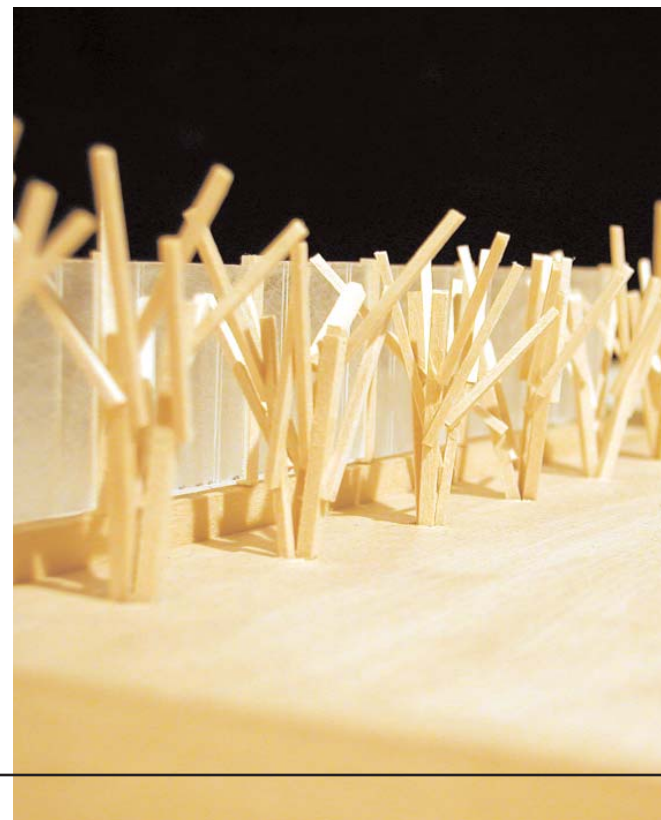


E U R Y T H M Y   R O O M



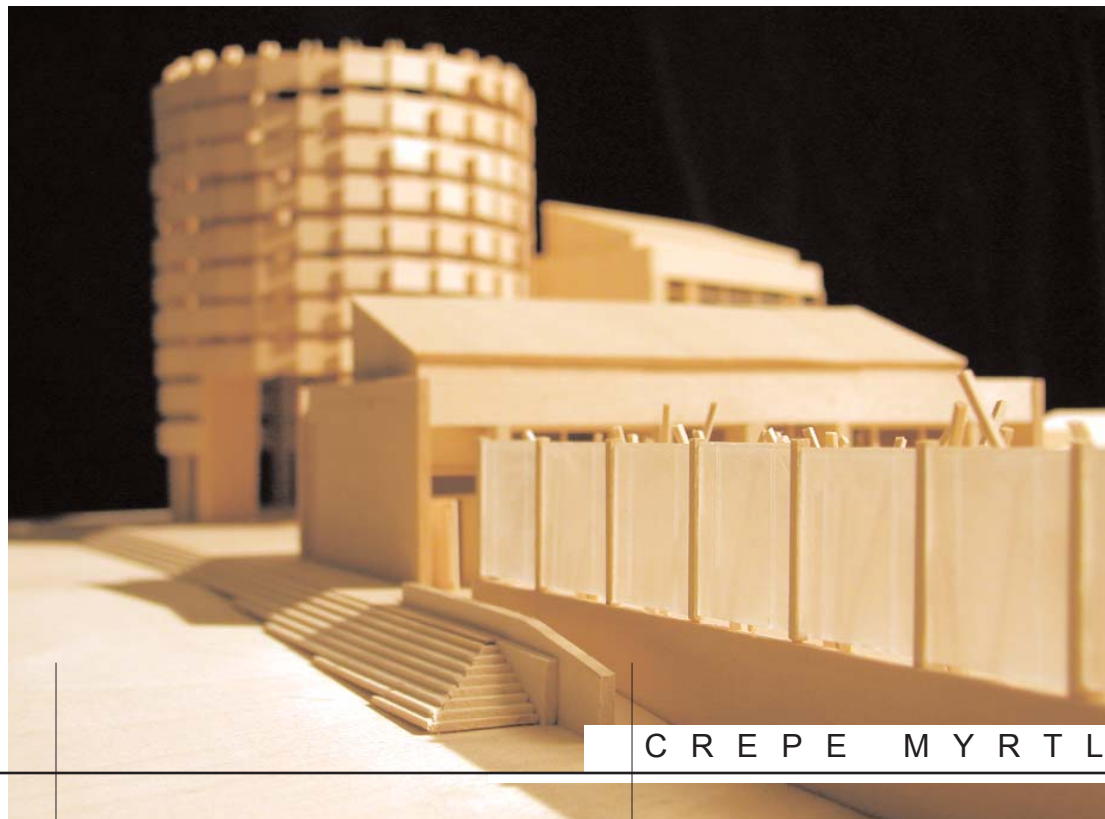
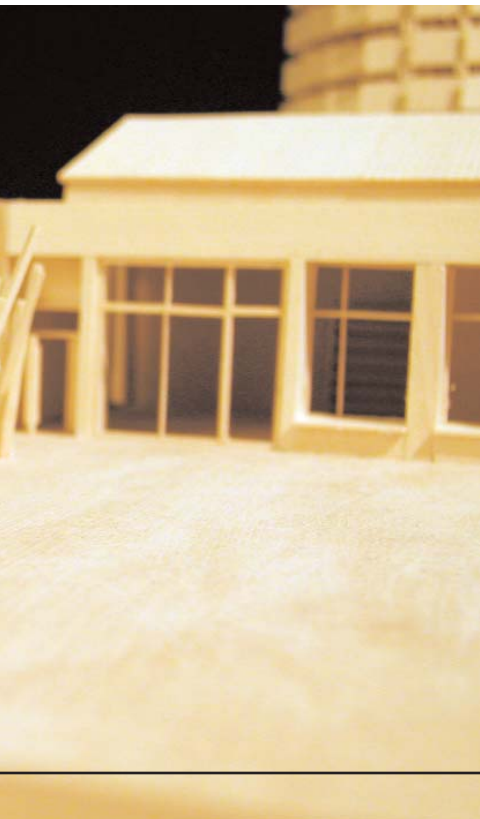


view of interior garden



crape myrtles at Childrens Garden

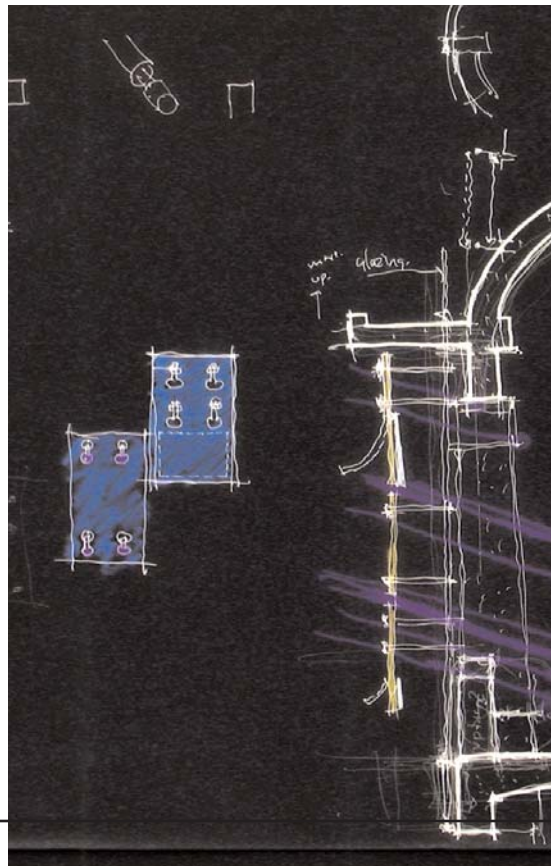




C R E P E M Y R T L E S



Bimetallic panels are used to sheath the main entry and the library reading room. Due to the difference in the coefficient of expansion between the metals, the panels bend closed when they heat up and open to reveal views of the city and the park when they cool. This method of enclosure creates a very dynamic space for the reading room where the pattern of light changes with the season as well as with the movement of the sun across the sky.



bi-metallic wall concept sketch



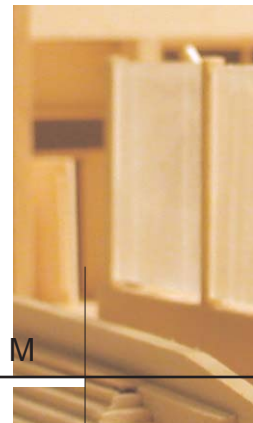
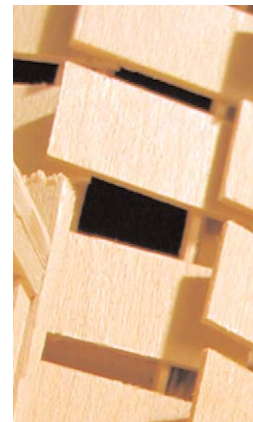
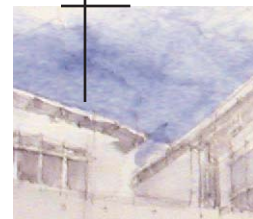
bi-metallic wall

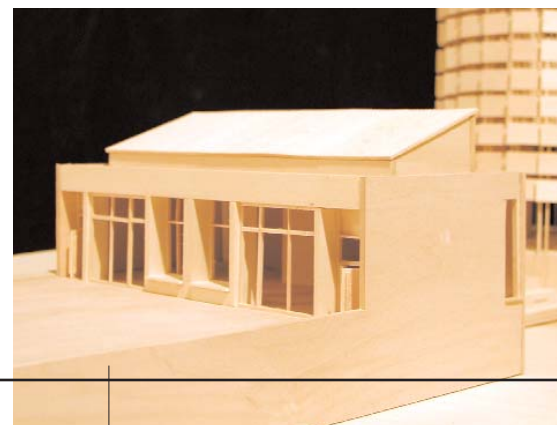
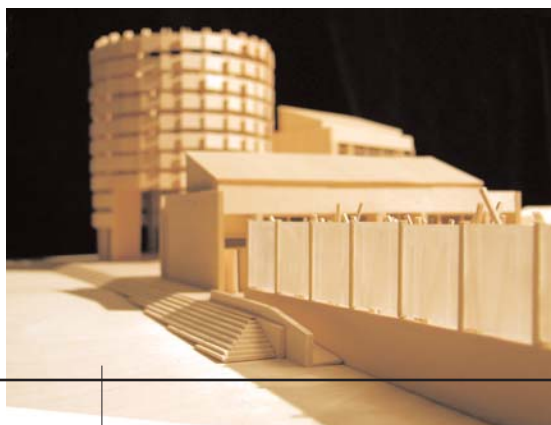


view of lower school classroom

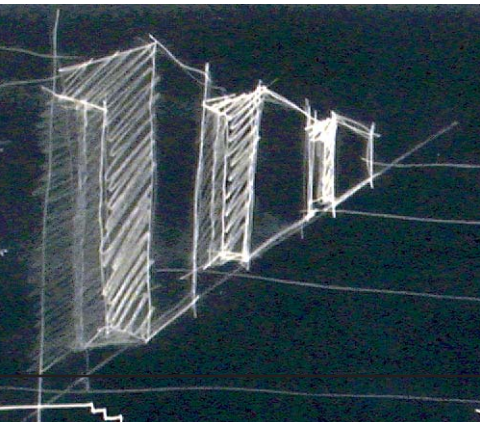


READING ROOM









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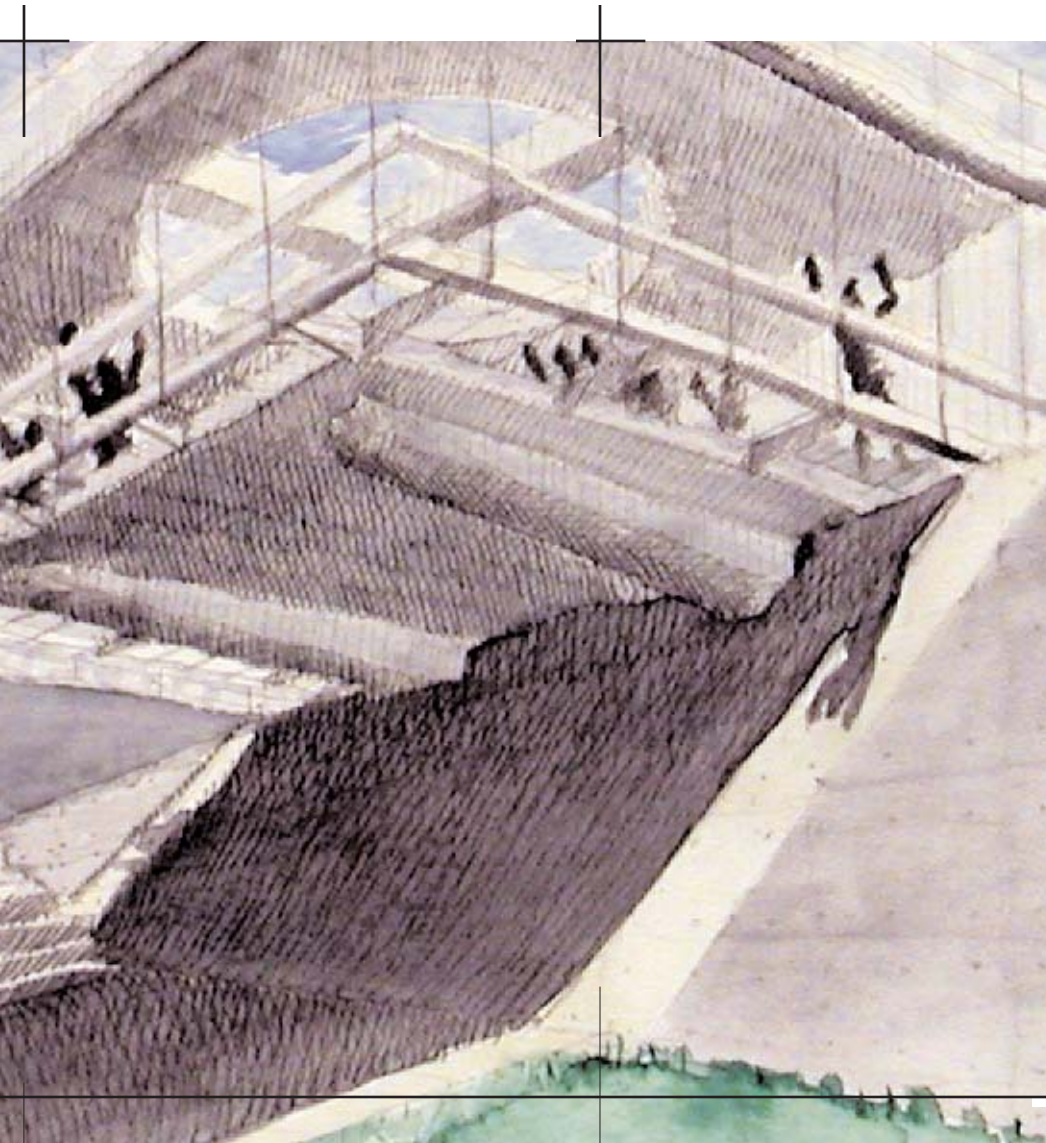
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## B I B L I O G R A P H Y





## James Robert Finn

### Education

2003 Master of Architecture  
Virginia Polytechnic Institute and  
State University  
Alexandria, Virginia

1996 Bachelor of Science, Architecture  
University of Virginia  
Charlottesville, Virginia

### Experience

2003 Ehrenkrantz Eckstut & Kuhn Architects  
Washington, DC

2001 Moore Architects, PC  
Alexandria, Virginia

1996 Case Design/Remodeling, Inc.  
Falls Church, Virginia

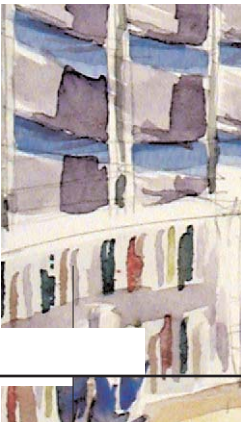
### Activities

2002 International Masonry Institute,  
Masonry Camp  
Swans Island, Maine

1996 Virginia Studio Record  
Executive Editor

1996 Alpha Phi Omega, National Service Fraternity  
President

1988 Boy Scouts of America  
Eagle Scout



V I T A



