TOTAL LEARNING: education beyond the classroom

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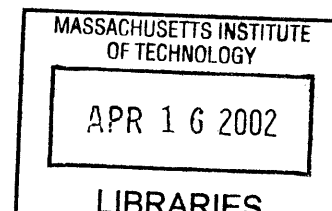
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TOTAL LEARNING: education beyond the classroom

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abstract:

What is a quality learning space?

This thesis is a study of a prototype for secondary school to provide a stimulating learning environment and a nurturing growing space in an urban site through exploration of different school components and their interaction. By designing specifically with high density areas in mind, this project proceeds to mediate special issues faced with many cities today regarding providing adequate space for the students in their area. Taking clues form dynamic relationships found in its setting, characteristics of the city extend into the interior life of the school to create a dynamic learning environment as rich as the streets themselves.

Learning is not about what happens in classrooms but what happens between classrooms. Learning is a total experience that extends beyond the classrooms into the student spaces and into the community where the real interaction and dialogue takes place. A quality learning space is the mediator between the school, students, and the community that serves as the catalyst for enriched development of life in the city.

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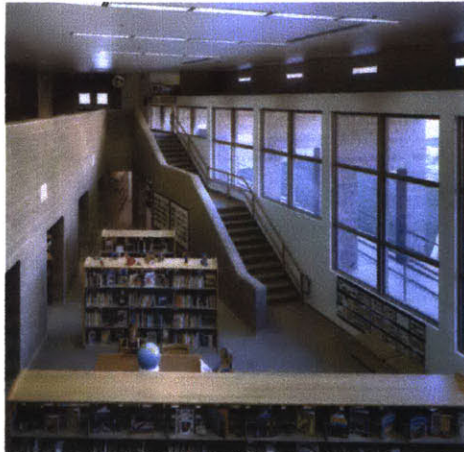
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United States is looked upon by the world as one of the leaders. While United States continues to strive to lead the world economically, technologically, and in its armed powers, it is ironic that America does not lead in its educational system or educational standards. School standards and test scores embarrassingly lower than that of most Asian and european countries, and many schools lack the facilities to properly nurture and educate growing number of children.

Many children grow-up in a learning environment that does not provide adequate personal attention to challenge and encourage these growing minds. Often, cities run around-the-year schools in order to deal with shortage in classrooms, and the existing classrooms are over-crowded. Schools in these cities are built to meet the immediate needs of housing students, but they do not deal with issues of space programming, and how they impact learning patterns of the students. Many of the problems can be attributed to poor planning of curriculum or staffing issues, but space planning for school facilities play a large role in providing for an environment to cultivate academic, social, physical, emotional, and aesthetic growth of the children. This is even more crucial when dealing with under previledged inner-city schools.

When it comes to schools design, there has been a great tendency to idealize a school into a picturesque, single story, large campus setting in a suburban town. But how does this design scheme effect an urban school where there is no room for a sprawled campus? City school buildings are often structures built for purposes other than schools. They are converted warehouse or office buildings fitted with classrooms as a result of needed space. But is this enough? Cities also have their own dynamics that is not alike that of the suburban towns. People living the cities have different life patterns that are specific and unique on their own. Schools and education for these people should address their uniqueness and their needs, aside from the idealized campus plans that are not realizable in their setting.

methodology:
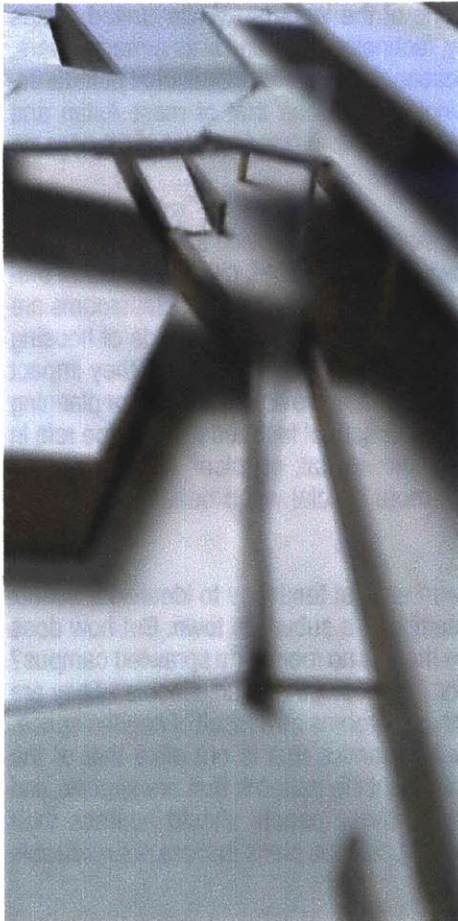
study model of the ground level arcade

School and Education has always been a subject that was close to my heart. Earthquake retrofitting projects of 1994 in Los Angeles Unified School District was one of my first projects out of college, and since them I saw many new and renovation project of educational facility come and go. But it was the fall of 2000 when I joined Prof. Roy Strickland and MPACT project in Paterson, NJ, that I begin to realize the power of place and facility, and how they impact the learning process of the students. In the inner city environments such as Paterson, a school can have an enormous impact on the community at several different levels. Schools such as MPACT not only bring higher level education to this town, but it has the potential to be used as a catalyst to promote community pride, revitalize the downtown area, and build a stronger community. The goal with this thesis is to challenge the design of a school building to further push these ideas, and help realize its full potential.

The project proceeded as following:

1. First, these ideas were researched and explored to form a definition of learning place and to clarify the ideology behind the school and the concept of Total Learning:

   · What is the historical precedent for an urban high school? How did these building evolve in the cities, and how were they used?
   · What are the programming components of an urban high school? What are relationships of these components to each other? How do these spaces play a role in the daily routines of the students to contribute to their learning and growing process?
   · What are the required factors for the community Integration of the school? At an urban scale, how does the school fit into the community? What facilities are shared between the school and the community? How does the school contribute

Fig. 0.4 MPACT students at work

to the community-learning environment, and how does the school take advantage of the resources available in the community?

- What is the analogy between the school and its corridors to the urban networks of the city? In the interior life of a school, strong analogy can be drawn between the components of school and their relationship to the components of a city and their dynamics. Classrooms and corridors of a school should be an integral network that works together to enhance the learning experience. Learning is no longer confined to the classrooms. By extending the learning opportunities throughout the entire facility, a school becomes a total learning experience.

- Define an underlying principle of learning that derives the ideology of the school. Having a clear idea of an educational value and philosophy will help define organizing principles of the school.

- What are the different building types that can exist in an urban setting? What are the benefits and difficulties of each type? What are the alternate forms that may emerge from these types?

2. What defines a quality learning place? How does this translate as an architectural language?

3. Define the site selection criteria.

4. Locate an appropriate site according to the defined site selection criteria. What are the site planning strategies?

5. Based on previously defined criteria, generate design concepts appropriate for the site.

1.0 what is a learning space?

1.0 what is a learning space?

Fig. 1.11 (left) after the last bell, where do the students go?
Fig. 1.12 lecture style teaching, is it the best teaching method?

1.1   defining the place for learning:

Fig. 1.13 can hallways be more than just a passage?

The classroom has remained a constant for nearly a century.   With information technology and new teaching and learning methods, will the classroom continue to be a uniform design? Or will the design and use of these spaces differ from the classroom as we know it?

With the increased use of networking and the information highway, will the role of the building diminish or are there new requirements, which will be placed on the facility? Many would argue that with increasing technology, more and more people would advocate home and distance learning. A school education, however, is still an essential in education of growing children as well as for the parents and the community for following reasons:

1.   School learning helps teach social skills to the student through daily student interaction and group works.
2.   Students' role as a teacher to younger students is invaluable part of education.
3.   Through healthy competition among the students, learning process is stimulated and students are motivated. School learning also helps to discipline and encourage unmotivated students.
4.   School is needed to help working parents with childcare during the working hours.
5.   Schools can help promote environmental consciousness to growing minds, leading by examples.
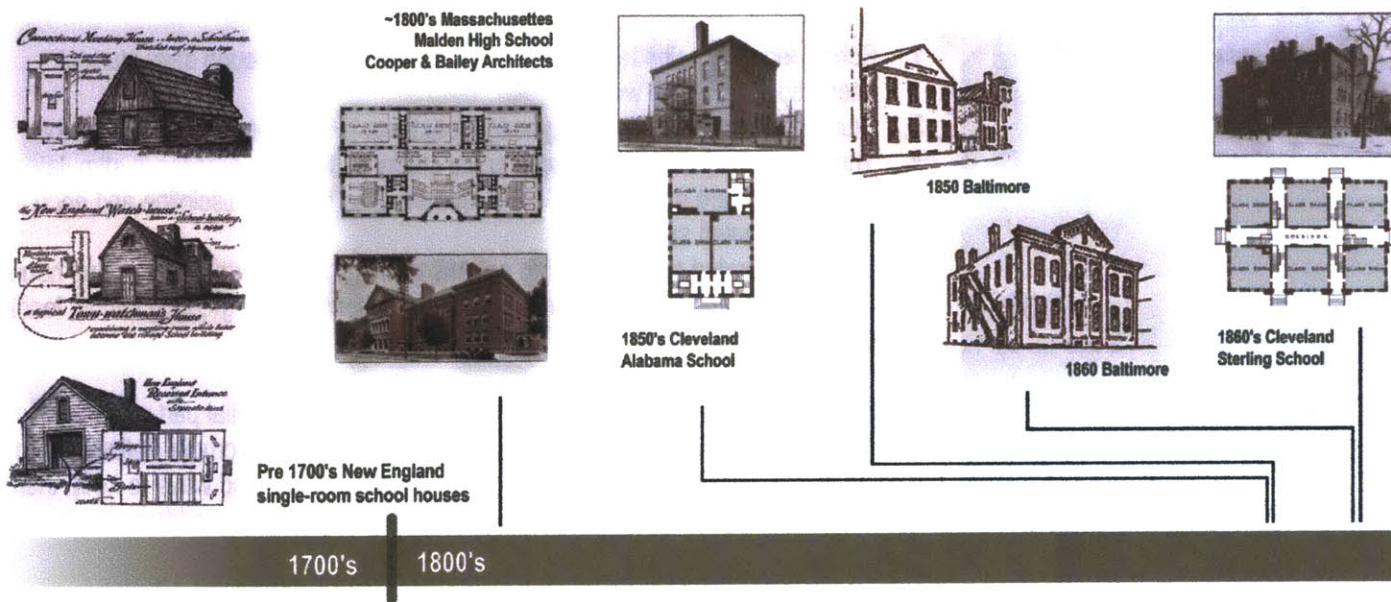
These are just few examples why a school learning is an essential part of the education system. In an environment with limited land and resources, it is crucial to find the way to provide quality learning space for the students rather than to find ways to keep them at home. The true challenge is how do we build school buildings that address the issues of today's society and today's education in an urban environment?

1.2 evolution of american urban school architecture:

In recent years, many educators and designers spent much effort in conceiving the idea of better learning environment. Much of this effort, however, is spent on the suburban towns with ample space and a large school ground. Needless to say, this is a luxury not affordable by the urban schools. Historically, many schools in the city have been renovated warehouse or office space that have been transformed into classrooms haphazardly. As shown on the Time Table below, majority of the school space is taken by the classrooms, and there is very little notion of the place beyond.

The examples shown from the schools of Cleveland and Baltimore are typical representation of urban schools during the industrial revolution. These plans have been conceived to maximize

History of school
buildings - Time Table

~1800's Massachusettes
Malden High School
Cooper & Bailey Architects

1850 Baltimore

Pre 1700's New England
single-room school houses

1850's Cleveland
Alabama School

1860 Baltimore

1860's Cleveland
Sterling School

1700's   1800's

classroom space and minimize hallways. Alabama School in Cleveland from the 1850's, for example, is a set of classrooms with stairs directly leading up to them with no hallway access in between them. Late in the century, however, the schools begin to adopt a notion of a central common space and physical education spaces, and begins to recognize that there are more to educational space than classrooms. Since then, however, the urban schools, have not changed much. Nothing much else has stood still in the last century. Why is it, then, the schools, where it should be the center of education for the young minds, have not evolved? If the sprawled suburban dream schools cannot be realized in the city, what are the alternatives for the city schools? what are the space options for them to achieve a rich learning environment in their own setting?

~1870's
**Greek Revival District School House
Barrington, Rhode Island
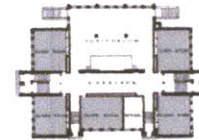(Thomas A. Teft, architect)
40'x25'x12' 64 students**
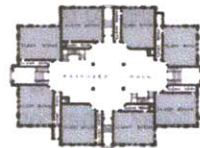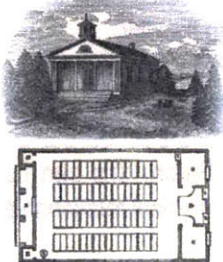
**1880's Cleveland
Giddings School**

1880 Baltimore

1890 Baltimore

**1900's Cleveland
Memphis School**

1920's High School

1900's

1.3   programming requirements

LIST OF REQUIRED SPACES FOR
JR/HIGH SCHOOL(Based on 500 students)

1. Classrooms (26,000 ~ 30,000 SF)
2. Student Resource Centers
   - tech center (1,500 SF)
   - music instruction area (800 SF min.)
   - art instruction area (1,200 SF)
   - flexible lab spaces
   - cafeteria
   - gymnasium
   - auditorium
   - library
   - special use / club meeting rooms
   - exhibition space
   - media center (video, audio)
3. Teacher Support spaces
   - conference rooms
   - faculty planning & work room
     (team teaching)
   - faculty dining room
   - adult toilet & telephone
4. School Administration
   - general office & waiting area
   - principle / asst. principle suite
   - guidance counselor area
   - nurse office
   - custodial services

Emergence of dedicated high schools in the late 1800's and early 1900's occurred as a result of increasing demand by the public to provide more and better education for the mass. A typical high school consisted of classrooms, a gymnasium, a cafeteria, an auditorium, and vocational shops. Since then, the high schools continue to evolve, new classes were added, and the demand for bigger and more flexible spaces continue to grow. As a result the square footage requirements of today's high school continue to grow beyond those of the traditional high school of the 1920's.

The table on the left outlines the requirements for a school based on 500 students. In many cities, it is typical to have a high school as large as 2000-3000 students. However, it has been proved over and over that the smaller schools with smaller classrooms are much more successful. It is generally understood today that an optimum number of students is 600-900 students. According to the requirements outlined on the left, based on 1000 students, 100,000 SF of space is required to build a high school. This come back to the original issue of the sheer size of the land required to build a school in the city.

The challenge is then how can one begin to program a high school such that all the requirements are met under minimum floor area? What components of the school can be combined rather than dedicating separate space for each use? Before this can be established, it is necessary to set out the program guidelines and their physical relationship for this particular project.

Before the relationship among the components of the school can be established, a clear relationship has to be drawn between the school and the community. By now, it has been mentioned several times that an urban school has to root itself into the community as an
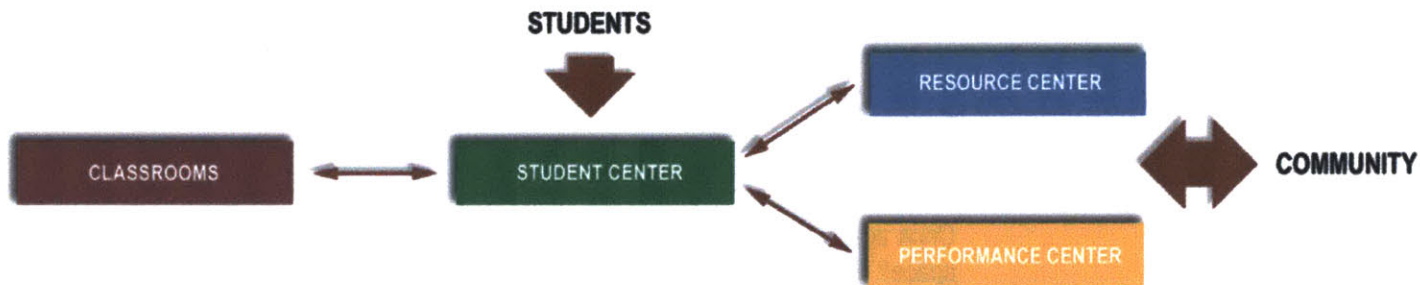
Fig. 1.31 Relationship diagram of the four components of the school programming. Their relationship and how the student and the community engage them is the key to defining the circulation pattern of the building.

integral part. And the exchange of resources that occur between the school and the community is the key factor in determining when, where, and how these programs occur. For example, the community provides the shcool with transportation, and the road system, local business including shops and restaurants, municipal facilities, and the richness of its culture and history. In return the school provides educational facilities, community resources including meeting halls, library, computer resources, as well as the performance and exhibition space.

In order to understand the possible relationship between different programs, different components have been grouped into four large categories: classrooms, resource center, performance center, and the student activity center. The classrooms include the lecture spaces, supply room and teachers' offices. The goal in this area is to optimize interaction among students and teachers. The resource center includes the library, reading rooms, computer & media resources all combined into one area. The resource center is conceived to be heart of the school. The performance center includes the auditorium and open galleries for the students and local residents. The last group is the student center. The student center is a flexible open space adoptable as student quad, amphitheater, lunch area, and small gathering spaces. This space is the center of the student activity and building circulation.

With these four groups defined, a simple relationship can be drawn as to how they start to interact ideally and physically (Fig. 1.31). How the student and community physically enter the system is the key to establishing the circulation for this building.

1.4   what is a quality learning space?

Once again, the issue come back to the big question again. What is a quality learning space? School is an institute that is guided by a set of programs, and it is not possible to guide learning solely by architectural design. School architecture, however can begin to guideline a set of ideals in which the spaces are occupied, and influence programming decisions. Following are the guiding principles that are important in designing a successful urban learning space. These principles are the road map in decision making process in the design phase of this project:

view into the arcade

1. **Bridges the relationship between students and the community allowing school and the community to exchange their resources.** By exchanging resources, the school can minimized, or eliminate, its required elements that may be supported by an existing nearby facility. The community can also benefit from the school's resources. Rather than dedicating the school facility as student only facility that is used form 9 am to 3 pm, the facility can be utilized around the clock by the community, thus making a significant contribution to the quality of life of the community. Also exchanging resources will help establish a stronger presence of the school as a part of the community, and the school can begin to act as a catalyst for the future development of the area.

2. **Promotes spirit of ownership for the students and the community, and thus promotes schools and community pride.** By providing facility that the students and community frequently use and like, the school can begin to establish a sense of pride among the students and the community. This is especially important in the inner-cities where younger children need to feel a sense of belonging as well as self-pride that will eventually help them grow into contributing members of the community.
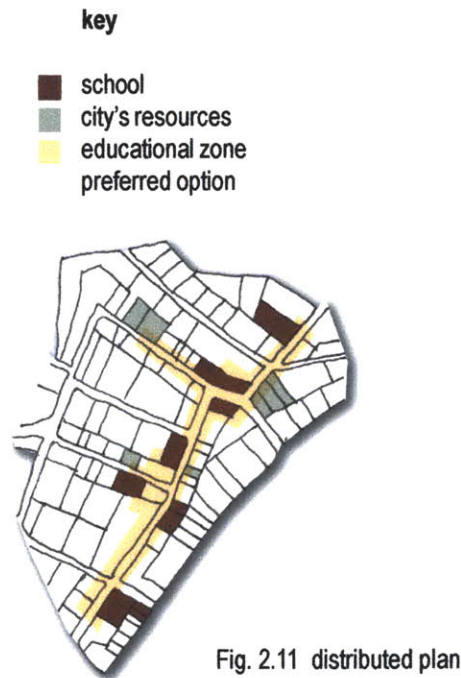
3. **Flexible space allows for reconfiguration and expansion to accommodate different teaching methods and curriculum.**   Rigid lecture-style teaching is no longer the only option of teaching, nor is it the preferred method of teaching. The classroom configuration must support the explorative ideals in teaching and learning, if not encourage them.

4. **Builds connection between teaching areas to other supporting facilities, breaking boundaries of the classroom walls.** Classrooms are no longer the only place of learning. In a typical high school, students occupy the hallways between classes every 45 minutes, which accounts for almost 20% of time spent in school. So what happens in those times when the students are not in the classrooms? Greater use of supporting facilities in and out of school allows for more innovative learning, and more attention must be given to parts of the school other than classrooms to find ways to continuously stimulate learning environment throughout the campus.

5. **Integration of technology and media.** Not much needs to be said to convey the importance of integration of technology in today's world. School needs to lead in education of the technology as an everyday part of the curriculum. The facility should not limit to a enclosed room full of computers, but rather a decentralized facility that can be accessed throughout the school.

6. Stimulates experimental learning and teaching spirit, away from traditional methods.

7. A good learning place is where students don't **HAVE** to spend time, but **WANT** to spend time.

Fig. 1.41 what is a quality learning space?

2.0 site

2.1   site planning strategies:

key

■ school
■ city's resources
□ educational zone
   preferred option

Fig. 2.11   distributed plan

There are many different options as to how to go about approaching a site. This is especially difficult to do when one's dealing with a generic site. However, when typical city streets and their configurations are considered, general site planning strategies can be formulated. The key here is to consider the city as a network of learning resources rather than to isolate a single building as an educational building. Because a location is such a great commodity in the urban setting, it is important to make every one of them count. So in planning for a new building, it is important to understand the available resources in the area and strategize as to how these resources can be worked into the network of learning resources. Here, three different site approaches have been considered:

Distributed Plan

In the Distributed Plan scheme (fig. 2.11), school buildings are broken down into smaller units, which are distributed throughout the town. These clusters of buildings create small nodes of learning center throughout the city. These nodes, combined with existing resources, a larger network of learning district is formed throughout the city. In this scheme, coordination between facilities becomes more of an effort, but the schools can be inserted in small lots as they become available. This can be a great advantage in acquiring real-estate properties for a new school. In this scheme, there is no defined school campus, and school buildings are inserted throughout the fabric of the city.
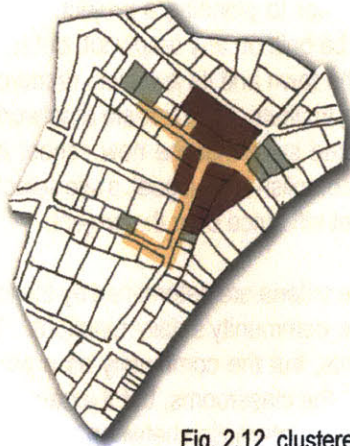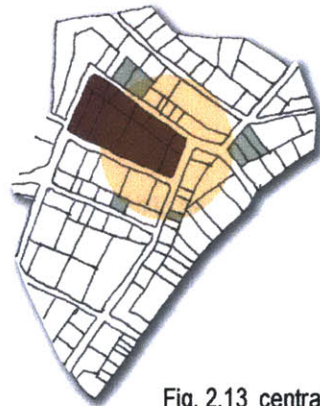
Clustered Plan

In Clustered Plan (fig. 2.12), school buildings are comprised of larger pieces clustered into one area, creating a campus-like plan. Neighborhood and the streets are still very much a part of the campus, and the connections made with the local resources extend the educational zone far into the city. In this scheme, the school is still fragmented into smaller pieces, avoiding the necessity for a large school grounds. But the creation of a concentrated campus creates a greater presence of the school in the neighborhood.

Centralized Plan

In the Centralized Plan scheme (fig. 2.13), the school building is centralized into one building mass. While this is a common method for many school campuses, it is difficult to allocate such a large landmass for a new building for many cities. Prospect of multiple story tower also poses difficulties in integrating the school into one, and avoiding fragmentation from floor to floor. This type of school tends to focus inward, rather than reaching out into the city. This type of building, however, is easier to manage and secure, and often it can serve as the landmark for the town.

All three of these schemes have their strengths and weaknesses. Depending on the different site conditions posed, any one of three schemes may be appropriate. For the purpose of this project, however, clustered plan is the preferred scheme. With the campus scheme, the school building is able to reach into the city, for the greater integration of the community and the school. This scheme also allows for several smaller buildings rather than one large one, which is beneficial when acquiring an appropriate site.

Fig. 2.12 clustered plan

Fig. 2.13 centralized plan

2.2   site selection criteria:

Perhaps it is more typical to have a site in mind in prior to planning a project. But as mentioned several times earlier, a school should not be built on any empty lot, but rather it needs to be planned carefully in accordance with the town and its available resources. Because the goal is not to create just a single learning institute, but to create a network of learning places, it is imperative that the site is located such that the new school is in position to influence rest of the network. In order to accomplish such a goal, a site selection is an integral part of the design process that has great influence over the project.

The site is selected based on following criteria. These criteria are determined by the ideal that the school facilities should be integrated into the community's daily functions. The school is the learning ground for not just the students, but the community as a whole. Similarly, the learning experience is not just limited to the classrooms, but it extends into the surrounding neighborhood. In order to promote such interaction between the school, students and the community, following criteria are the key factors in site selection:

1. Location of existing resources and supporting facilities in respect to the site
2. Accessibility and visibility of the site
3. Surrounding commercial activities.

Location of existing resources and supporting facilities is a crucial part of the site selection. The school needs to be strategically located among these facilities to create a link between them, thus creating an educational zone. Existing resources include facilities such as other existing schools and learning institutes, library, museum, hospitals, athletic and recreational facilities, and YMCA or other youth groups. Civic and public facilities such as the city hall and courthouses are also an important part of the existing resources.

Since the goal of the project is to create a school that will be an integrated part of the city, accessibility and visibility of the site are also an essential factor in success of the project. It goes without saying that regardless of how great the facility is, if it's not readily accessibe, it will not be used. An ideal site is a site that will put the school in the heart of the activities with great exposure to the community. Adjacent roads and the proximity to the public transportation should also be considered.

The last essential factor in site selection is its proximity to surrounding commercial activities. In high school education, hands-on vocational training is as an important part of the learning process as any subjects taught in school. The proximity to a commercial or industrial area will increase chance of exposure of students to the working world. Local businesses can also provide for part-time jobs after schools, and internship programs can be established as part of the curriculum.
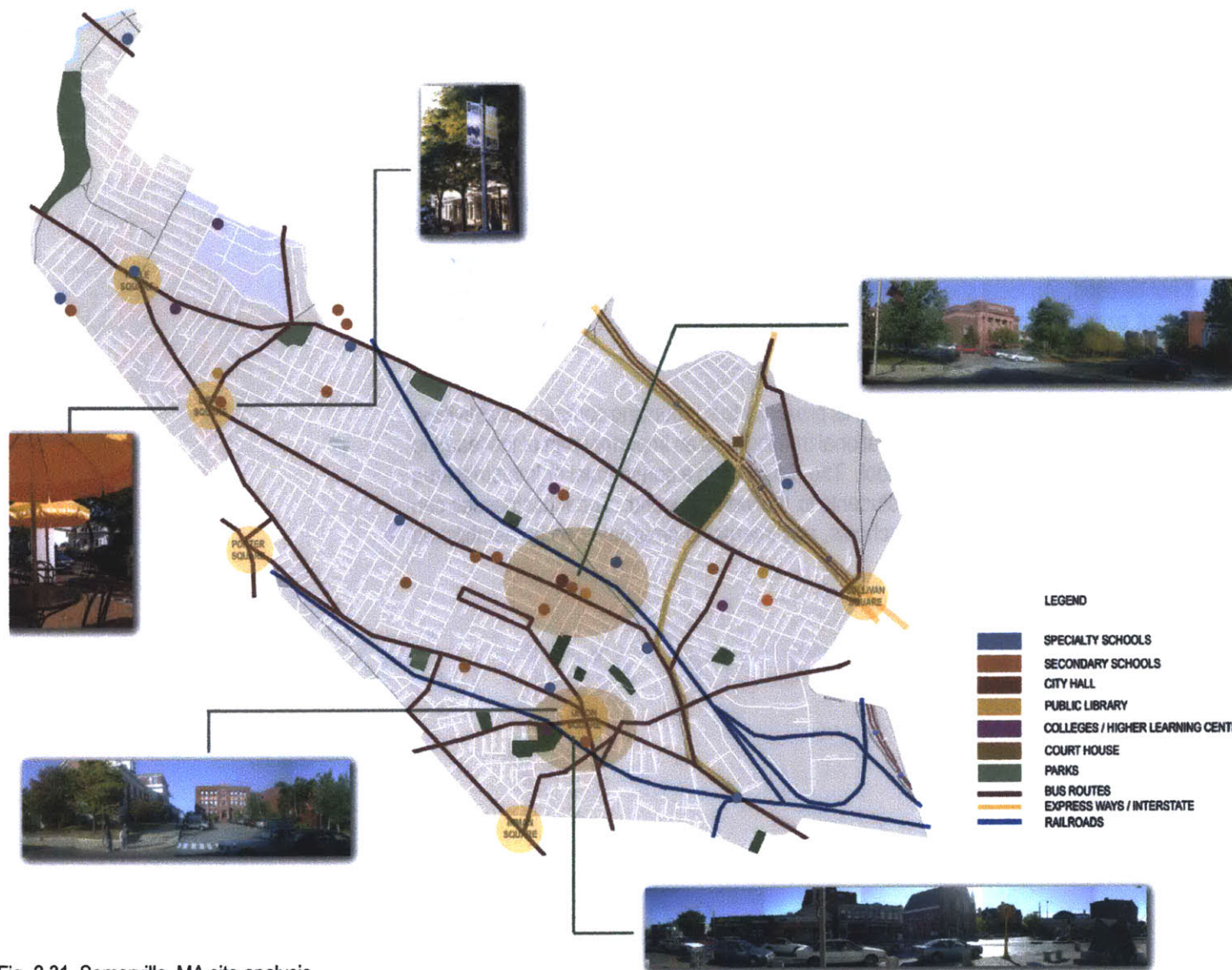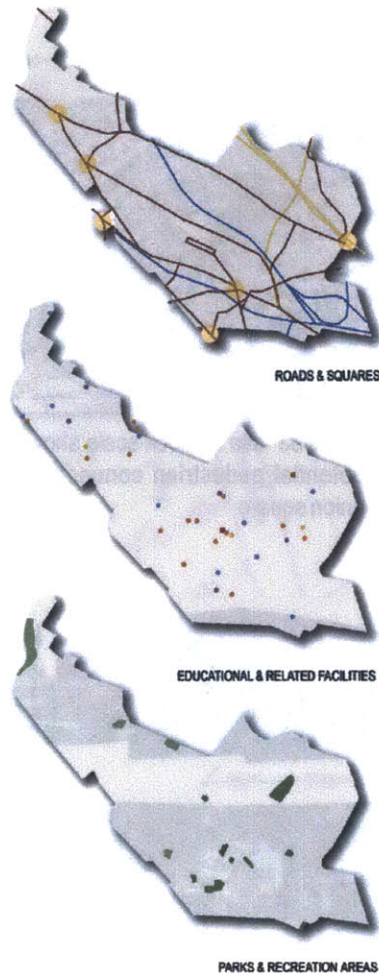
commercial activity

Accessibility

Fig. 2.31 Somerville, MA site analysis

LEGEND

- SPECIALTY SCHOOLS
- SECONDARY SCHOOLS
- CITY HALL
- PUBLIC LIBRARY
- COLLEGES / HIGHER LEARNING CENTE
- COURT HOUSE
- PARKS
- BUS ROUTES
- EXPRESS WAYS / INTERSTATE
- RAILROADS

2.3   site selection

ROADS & SQUARES

EDUCATIONAL & RELATED FACILITIES

PARKS & RECREATION AREAS

Somerville, MA is chosen as the general site for the project. Somerville is one of the densest cities in the country with a good mix of residential, commercial, and industrial areas. Somerville is also one of the oldest cities in the country with rich historical background. As the city's website claims, "The City of Somerville, Massachusetts has a wealth of pride, diversity and a deep legacy of history rooted in the American Revolution. This City of hills is home to the first flag of the United American colonies, raised on Prospect Hill in 1776." These qualities combined with number of existing squares, parks, and resources in the city, Somerville is one of the ideal cities.

Once the general area of the site was determined, the search for the ideal site began. City's resources were located on to the map including its transportation routes, major roads, existing schools and other learning institutes, youth centers, hospitals, and municipal facilities. After they have mapped, two area of concentration was apparent: the city hall area, and the Union Square.

Union Square features an eclectic mix of ethnic restaurants, mom-and-pop gift shops, small businesses and offices. Its rich history and culture provided a dynamic setting for a school with ample resources to tap into. Right off of the hear of the Union Square, the warehouses that exist in the middle of the block of the Bow Street offered to be a very interesting site. Because it is located in the middle of the block, with surrounding building ranging from historically preserved residential buildings to newly newnovated retail building, it promised to be a very difficult site, but with much potential and challenges to make the project interesting.

While boasting many ethnic restaurants and store, there's a lack of pedestrian traffic in the Union Square due to the heavy traffic in Somerville Street. The street cuts off one side of
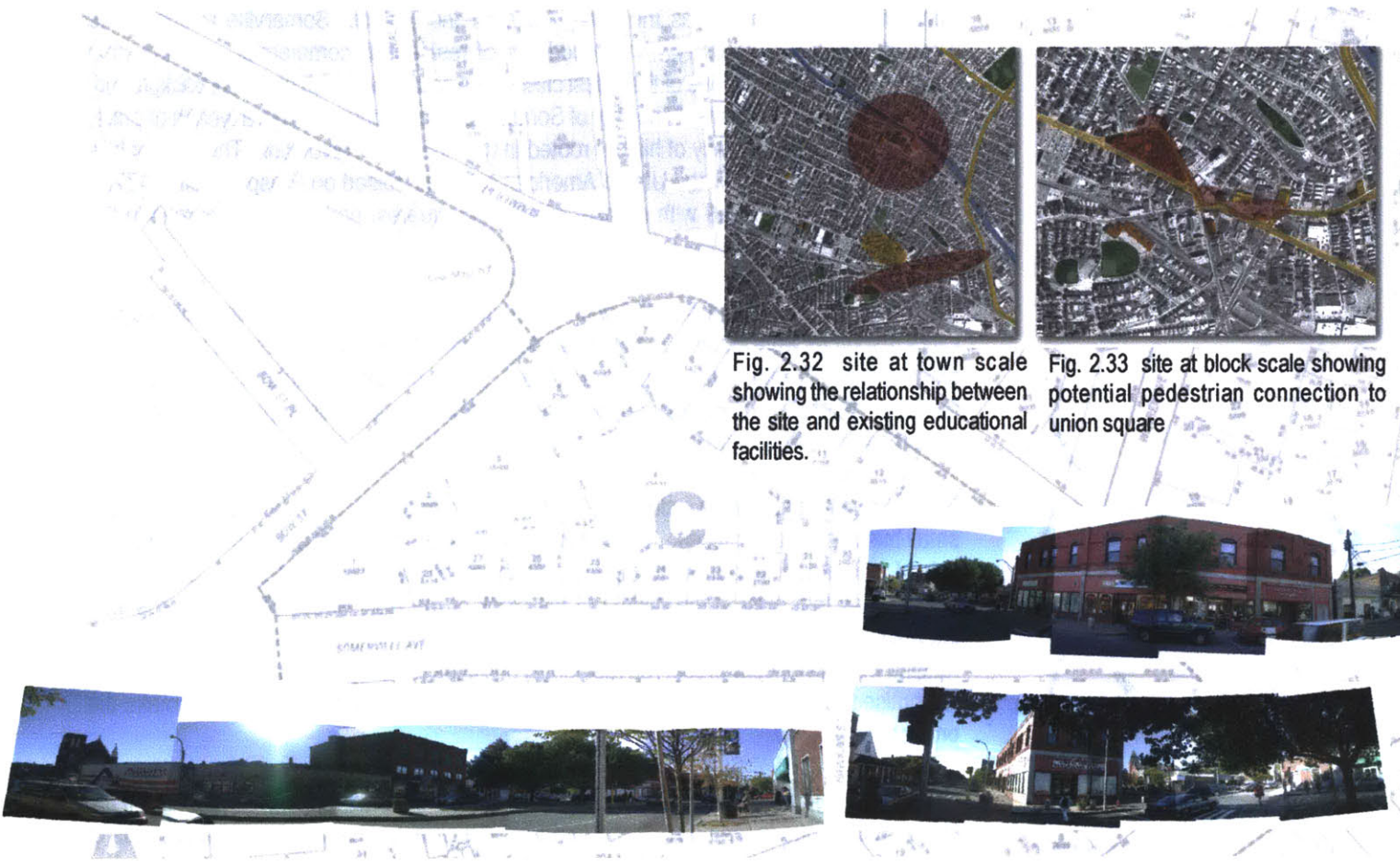
Fig. 2.32 site at town scale showing the relationship between the site and existing educational facilities.

Fig. 2.33 site at block scale showing potential pedestrian connection to union square

fig. 2.34 site location - Bow Street (in red). The yellow zones show existing Union Square plaza and the newly proposed plaza on Bow Street and Summer Street and their potential linkage.

the street from the other, making it rather difficult to make connection on the two sides. Union Square also has good number of diminishing businesses and empty buildings, that establishment of a school here could prove to be instrumental in revitalizing the area.

Existing vacant lots at the corner of Bow Street and Summer Street has the potential to be developed into a new pedestrian center. By activating this corner, a pedestrian corridor can be created between this center and the existing union square, and help revitalize the existing business along the Bow Street.

The city has assigned a special task force in last 2 years to conduct surveys and workshops in the area in the efforts to revitalize Union Square. Through these workshops, many people have voiced the need for pedestrian activities such as cafe and outdoor restaurants. Currently there are many great restaurants in the area, but where can they go after the meals? There also has been much request for a community center where the young and the old can interact. There is a great opportunity on this site to incorporate all these elements into the school facility, and the building can serve as the catalyst for much needed change and improvement in the area.
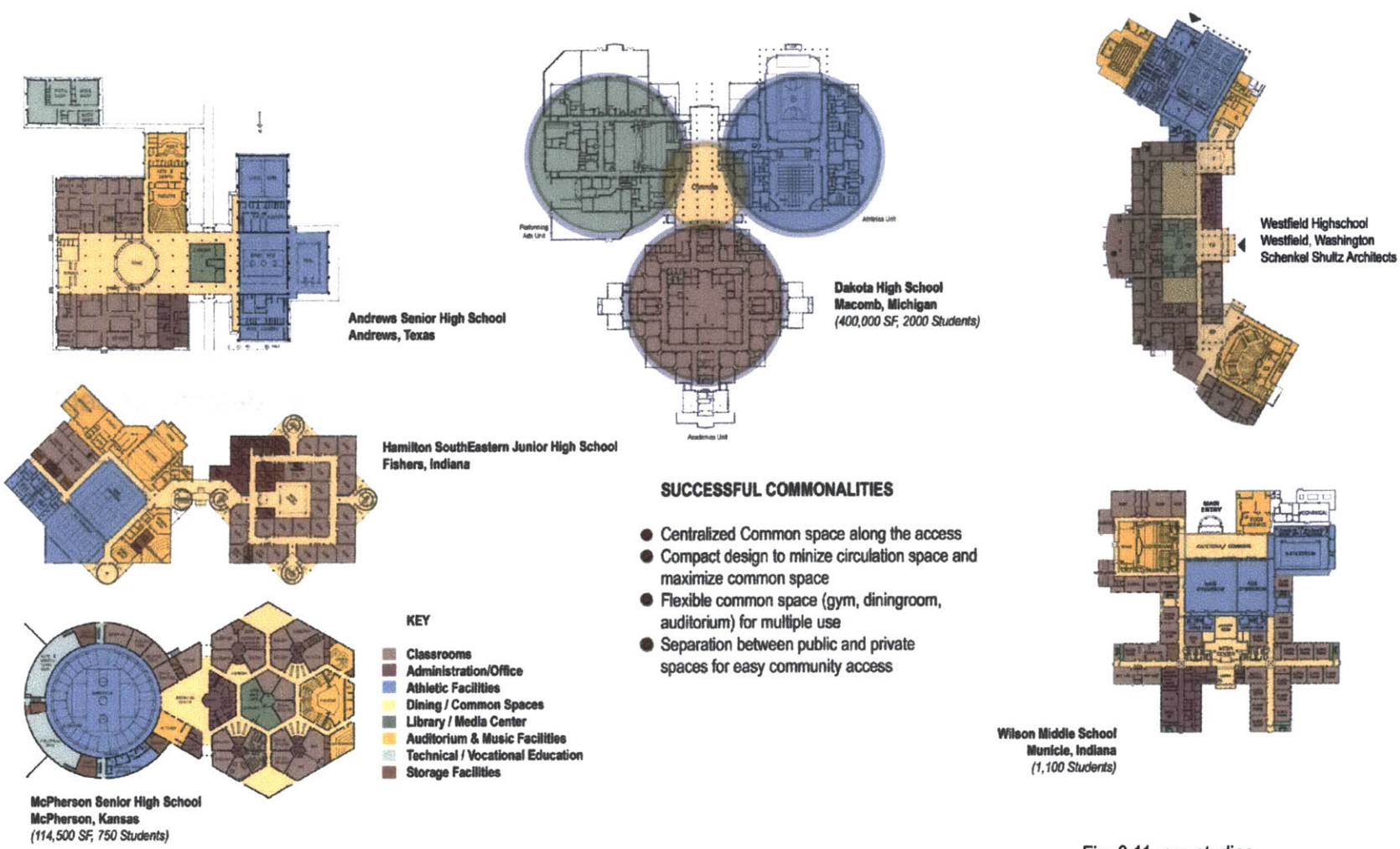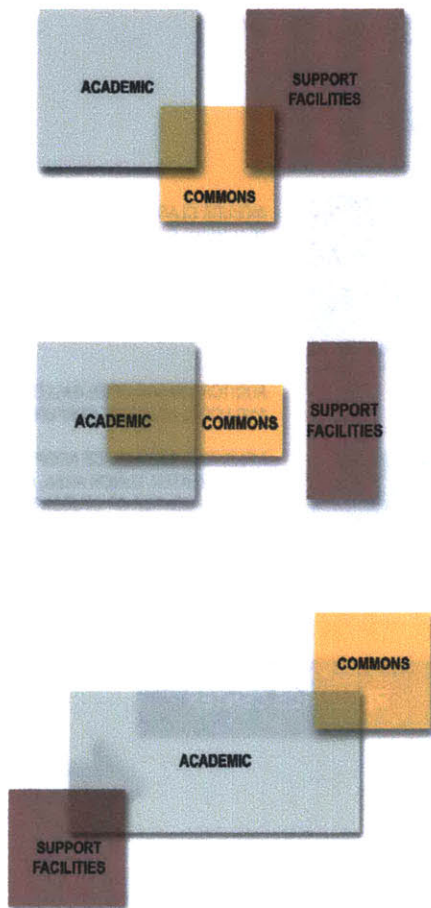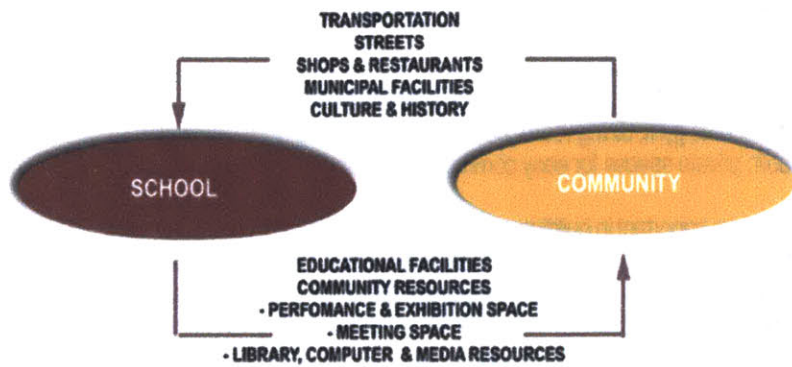
3.0   design concept

Andrews Senior High School
Andrews, Texas

Hamilton SouthEastern Junior High School
Fishers, Indiana

Dakota High School
Macomb, Michigan
(400,000 SF, 2000 Students)

Westfield Highschool
Westfield, Washington
Schenkel Shultz Architects

SUCCESSFUL COMMONALITIES

- Centralized Common space along the access
- Compact design to minimize circulation space and maximize common space
- Flexible common space (gym, diningroom, auditorium) for multiple use
- Separation between public and private spaces for easy community access

KEY

- **Classrooms**
- **Administration/Office**
- **Athletic Facilities**
- **Dining / Common Spaces**
- **Library / Media Center**
- **Auditorium & Music Facilities**
- **Technical / Vocational Education**
- **Storage Facilities**

McPherson Senior High School
McPherson, Kansas
(114,500 SF, 750 Students)

Wilson Middle School
Muncie, Indiana
(1,100 Students)

Fig. 3.11 cas studies

3.1   case studies:

Fig. 3.12 space programming diagrams

In order to understand how typical high school are organized and used, a series of case studies were conducted. The schools were chosen rather randomly based on recommendations and reviews of publication endorsed by the board of education. First, programs are identified in each of the schools categorized as shown on the diagram (Fig. 3.11). Once these programs have been identified and coded, it was clear why some of these schools are more successful in their use other than the others. Some of the common successful traits of these schools includes following:

1. Centralized common space along the main access.
2. Compact design to minimize circulation space and maximize common space.
3. Flexible common space such as gym, dining room, auditorium, for multiple uses.
4. Separation between public private spaces for easy community access.

These are all characteristics that are important in building a compact school with maximized function. In particular, item 3, creating a flexible common space, which can be adopted into multiuse space, is the key to minimizing required space. Item 4 is also an important factor for a school with heavy community use. Clear separation of zones can help organize the school such that the community access and student access can be separated and bring ease to access control and security control. This also allows the school to operation only a part of the school as needed.

Based on these findings, a few programming diagrams have been generated (shown on the left). The first diagram shows separation between academic and the support facilities joined by the common space. In this scheme, the common space serves as the entrance to the school and either academic or the support facility wing can be access from it. The second scheme is a multiple building scheme in which the academic and the common space are joined, but has a separate support facility building. This is advantageous in case the buildings are separated by roads or pedestrian access. This is also appropriate in case of the campus scheme where outdoor circulation exists on the school grounds. The third scheme is the least successful scheme where access to the support facility exists through the academic wing. In this scheme the emphasis is in the academic facilities, with minimum common or support facilities.

TRANSPORTATION
STREETS
SHOPS & RESTAURANTS
MUNICIPAL FACILITIES
CULTURE & HISTORY

SCHOOL

COMMUNITY

EDUCATIONAL FACILITIES
COMMUNITY RESOURCES
· PERFOMANCE & EXHIBITION SPACE
· MEETING SPACE
· LIBRARY, COMPUTER & MEDIA RESOURCES
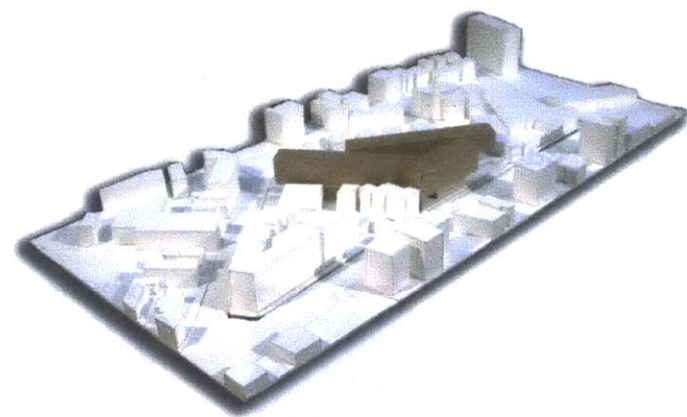
CLASSROOMS

INCLUDE CLASSROOMS, SUPPLY CLOSET AND TEACHER'S OFFICES - INTEGRATION OF TEACHERS AND STUDENTS FOR OPTIMAL INTERACTION.

RESOURCE CENTER

INCLUDES LIBRARY, READING ROOMS, COMPUTER & MEDIA RESOURCES - ALL RESOURCES IN ONE AREA

PERFORMANCE CENTER

AUDITORIUM AND OPEN GALLERIES FOR STUDENT AND LOCAL RESIDENT PERFORMANCE AND EXHIBITION.

STUDENT CENTER

A FLEXIBLE OPEN SPACE ADOPTABLE AS STUDENT QUAD, AMPHITHEATER, LUNCH AREA, AND SMALL GATHERING SPACES - CENTER OF STUDENT ACTIVITY AND BUILDING CIRCULATION.

STUDENTS

RESOURCE CENTER

CLASSROOMS

STUDENT CENTER

COMMUNITY

PERFORMANCE CENTER
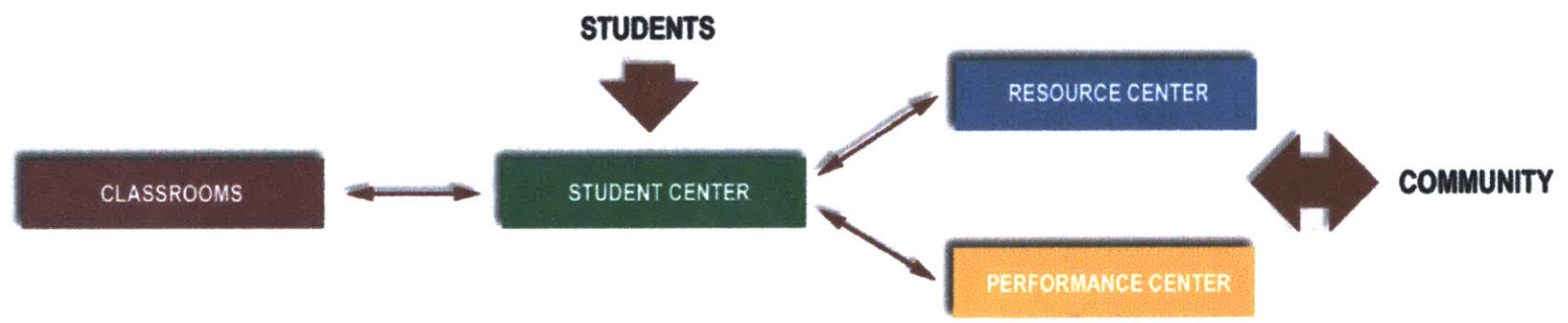
3.2   preliminary design concepts:

1

2

3
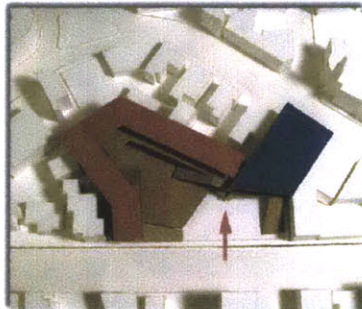
By now, it has become very clear that the driving factor in the site and access design of this project is driven by the community integration and community access. It is very important that the school does not become a mass of building sitting in the middle of the block, but rather it create an inner-block street that flows in and out of the building and the site. Access to the project should exist from all three sides of the block, linking the three distinct sides of the neighborhood. The ground floor should be given to public access and community based programs. These programs include an auditorium/performance center, an exhibition gallery, a library and a media center with meeting rooms, and series of plazas. This is the key to successfully integrating the school into the community. Based on the diagrams developed thus far, three initial schemes have been generated.
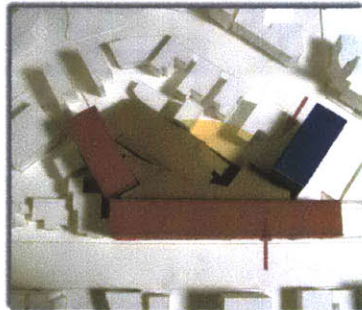
In the first scheme, central access is from the main road, Somerville Street. With the common courtyard in the middle separate access exists to academic wing to the left, and the library and the media center to the right. The library/media center, which has the heaviest community use, is separated from the main academic wing for better control of security and access. The ground floor under the library wing is left open to the public in order to create connection between Bow Street and Somerville Street. The main atrium space of the school on the second level is southern faced for maximum direct light.
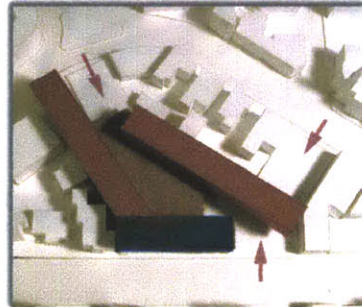
In the second scheme, the common space is pushed further into the block towards the residential building along the bow street. This scheme allows for a building frontage to the Somerville Street, and the ground floor spaces can be used as retail space, while the upper levels are occupied by the school. Lower roof line of the common space is in better scale with the adjacent residential buildings.

The third scheme, the winning scheme, consists of two bars of classrooms, with the third bar, the library, fronting the Somerville Street. This scheme combines the advantages of the other two scheme, and it allows for better flow of public traffic through the site. This scheme allows for three point of entrance with varying characteristics, appropriate for each edge.

CLASSROOMS

STUDENT COMMON
SPACE &
CORRIDORS

AUDITORIUM
& GALLERY

RESOURCE CENTER

MIND
BODY
SPRIT
INTELLECTS

MATH & SCIENCE

ARTS, MUSIC & LITERATURE

RESEARCH - LIBRARY & MEDIA CENTER

ACADEMIC

ACADEMIC

COMMONS

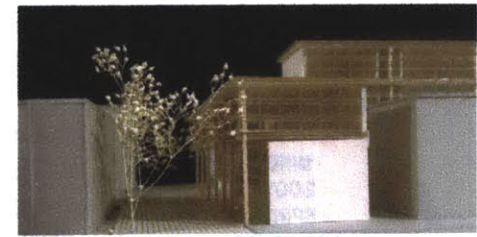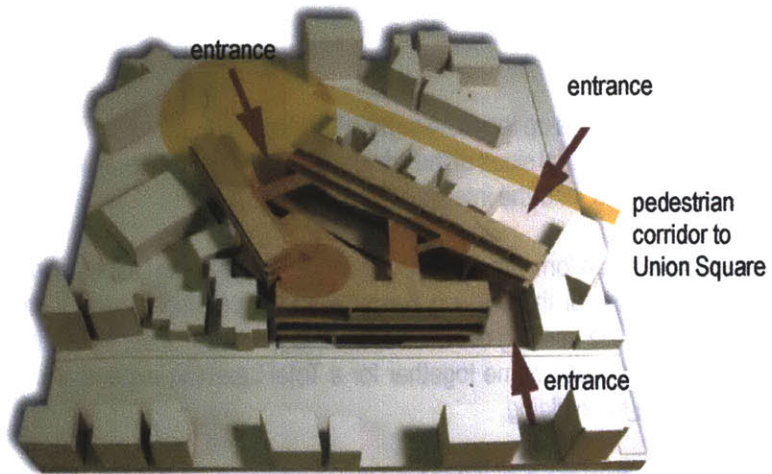STREET

SUPPORT FACILITIES

STREET
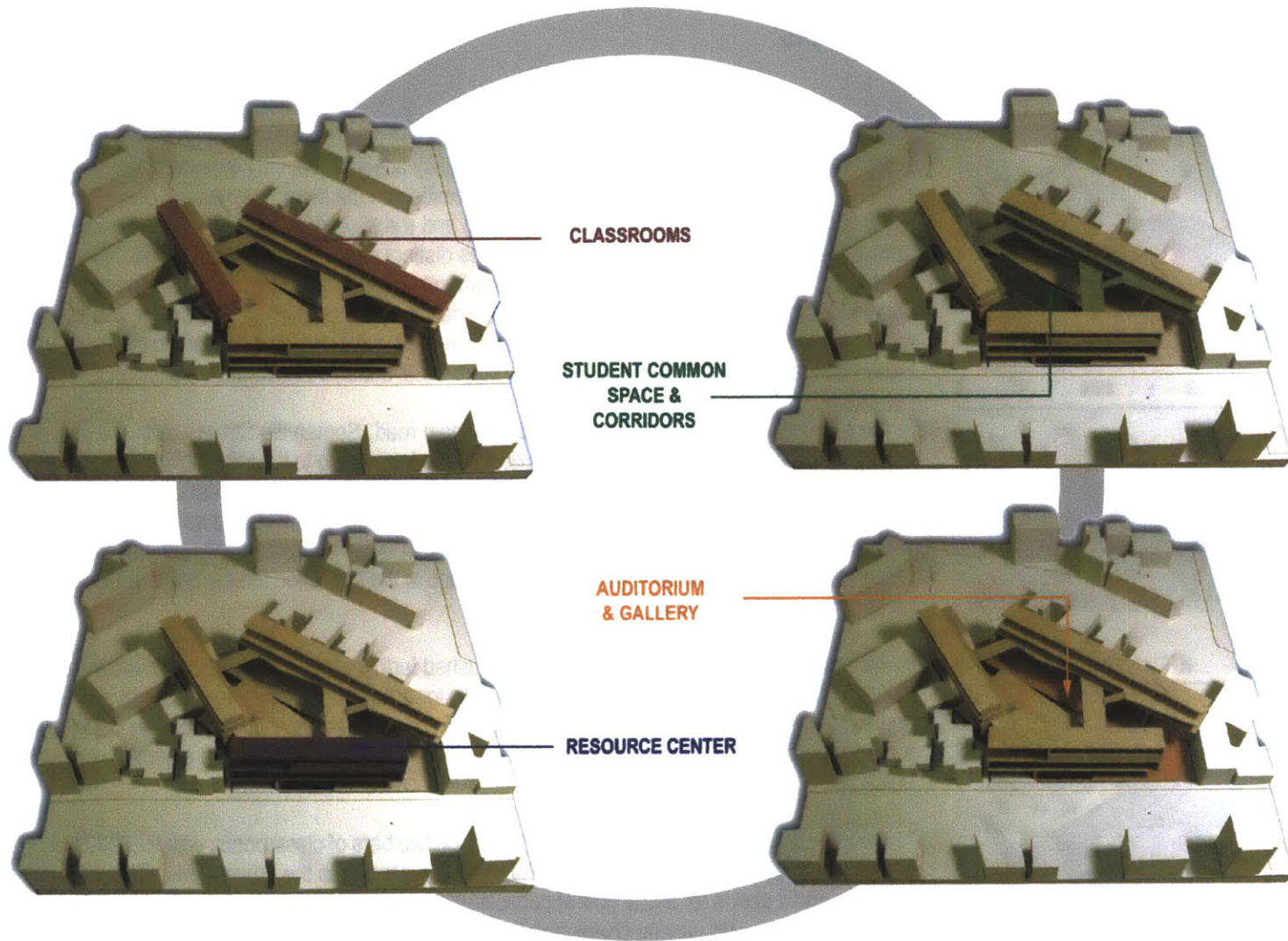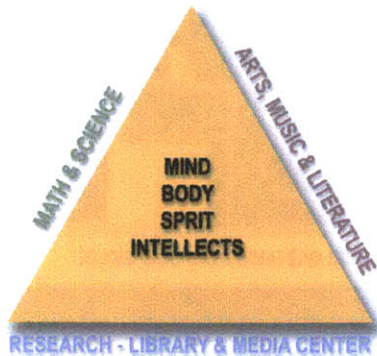
The triangle diagram to the left sums up the main organizing idea of this project. Three sides of the triangle, representing three intellectual sides of the education surround the core of learning process, enrichment of mind, body, spirits, and the intellects.

This is diagram is translated into a form diagram below, which shows the two classroom wings with the research center at the base of the building surrounding the common space. The common space is not only the heart of the building circulation, but it is the heart of the education where all components of the learning process come together for a Total Learning experience. The public circulation exists in-between the building.
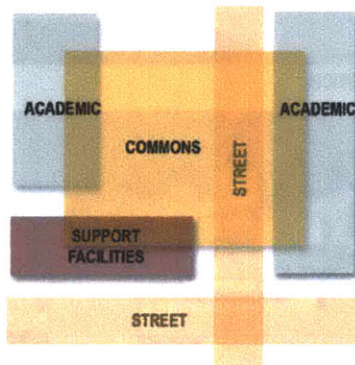
The diagrams to the far left show more in detail how the buildings is organized. The elements of the project, which are considered community shared, are the auditorium, the gym, exhibition gallery, and the library. These facilities are given separate access from the ground level. The ground level consists of several levels of plaza that are joined by the arcade running along the exhibition gallery to the east wing and the library stacks along the south. There is also a space allocated for a café to introduce a commercial element to the ground. With use of retail spaces and public plaza, the ground level becomes a space that belongs not just to the school, but the community, for a true integration of the two.

The school is entered from the second level where the common space serves as the main entrance as well as the student quad. Classroom, the library, and other supporting facilities are accessed from this common. The Administration sits at the first level of the school, right off the commons for the ease of access and security control of the school. The library fronts the Somerville Street for ease of car access. It can bee access from the lower plaza by the public, or from the main level of the school by the students.
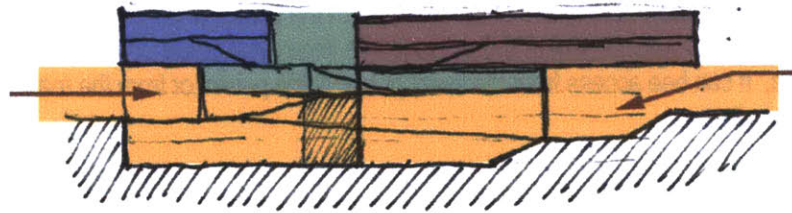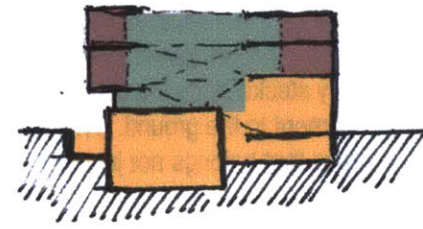
entrance

entrance

pedestrian
corridor to
Union Square

entrance

study model diagram and section diagram
showing site approach and public path
through the ground floor.

out door cafe entrance from bow street

north entrance

facade from somerville street

3.3   site approach:

The block is triangular with three very different sides. The Somerville Street is a commercial district with heavy traffic, while the Bow Street on the west side is a quite semi-commercial zone with a few shops and restaurant. The third side of the project to the north Bow Street is a quiet residential street with scare amount of traffic. The project enters from 3 sides of the triangular block taking advantage of the three distinct qualities of the site. The scale of the building is set such that each side of the project is in harmony with rest of the street.

The ground level of the project is dedicated to the community. With the outdoor café, library courtyard, open gallery and the auditorium plaza, there are several levels of public spaces that are connected by arcades and ramps.

North side of the block is the grandest entrance into the site, and it is also the main entrance into the auditorium. The plaza fronts the grand stair entrance into the auditorium, narrowing into the arcade connecting to the library plaza. The west classroom wing cantilevers out into the plaza, and marks the entrance.

arcade connecting bow street to somerville st.

Side facing the Somerville Street is a library with commercial front and a large courtyard to invite the pedestrians. The internal street cuts through the block, connecting the Bow Street with the Somerville Street. This internal street is edged by retail store and a café, creating an outdoor seating area in the plaza. This street, or arcade turns into the school, running between the sunken plaza and the open gallery, connecting to the auditorium entrance plaza located on the north side of the block.

West entrance is set low in scale with the residential buildings along the street. The entrance is greeted by an outdoor café and the arcade. The library stack sits over the café.
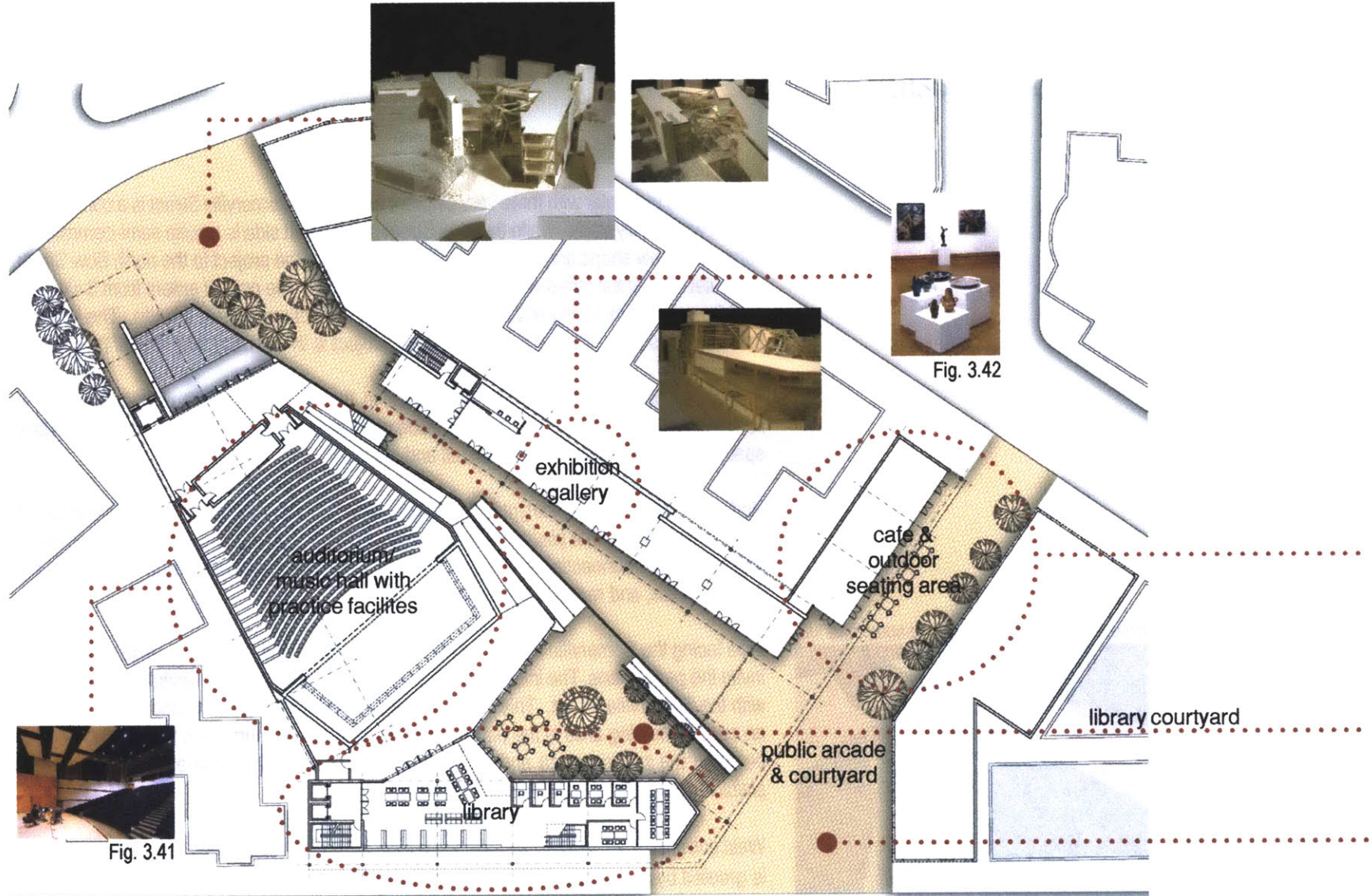
Fig. 3.42

exhibition
gallery

cafe &
outdoor
seating area

auditorium/
music hall with
practice facilites

library courtyard

public arcade
& courtyard

library

Fig. 3.41

Fig. 3.41 Gournd Floor Plan

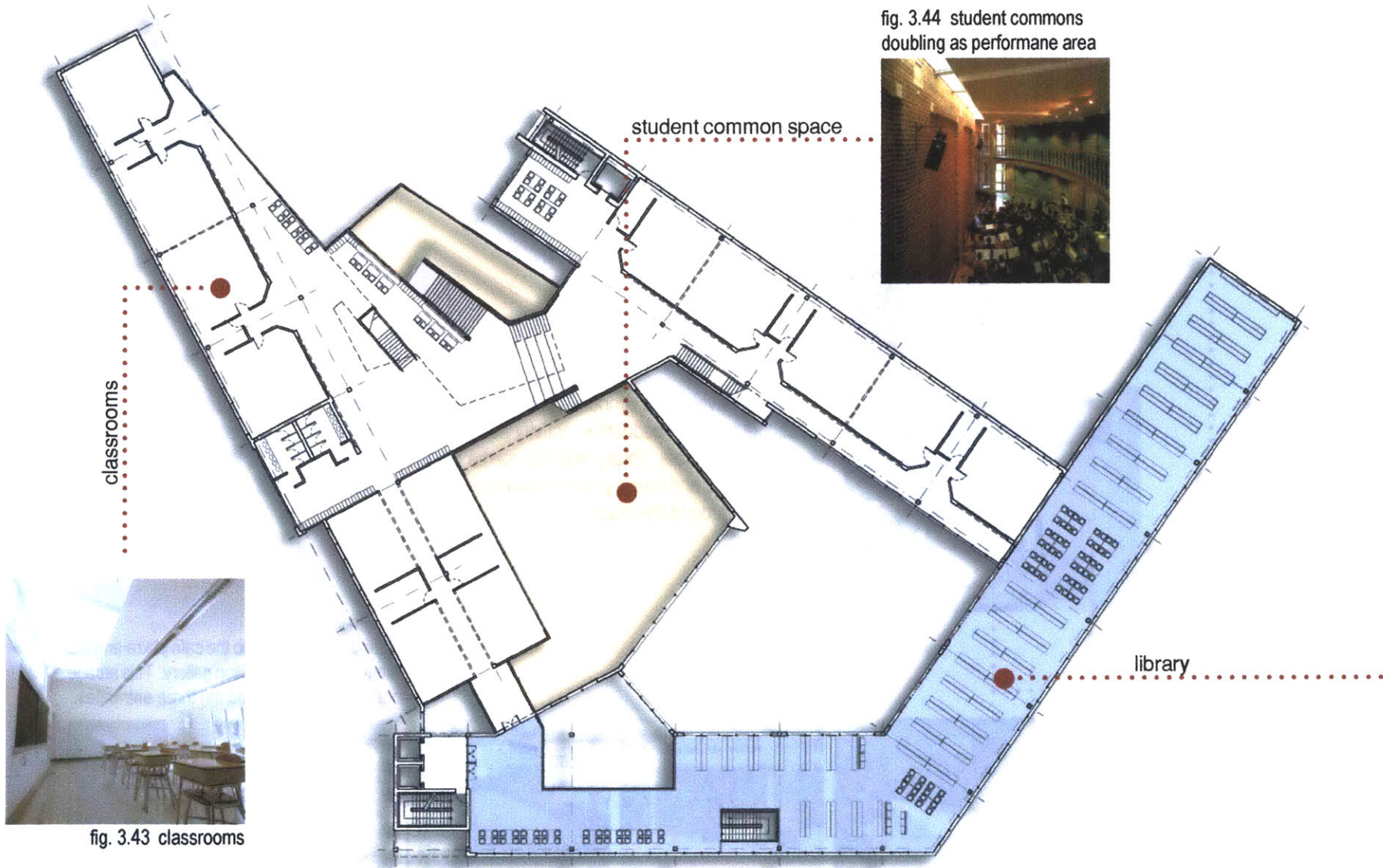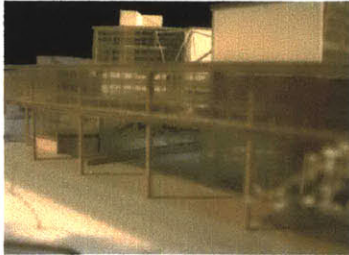## 3.4   design highlights:

Ground level of the school is dedicated to the community. By creating internal streets, the school provides pedestrian activity away from the busy traffic of Somerville Avenue. With the outdoor cafe, library and the media center, plazas at different levels, public gallery, auditorium, and music practice facilities, there are great number of activities for the public all year, around the clock.

Entrance sequence into the cafe plaza and the arcade along the exhibition gallery. This arcade connects the plazas and the three entrances.

arcades &
plazas

fig. 3.44 student commons
doubling as performane area

student common space

classrooms

library

fig. 3.43 classrooms

view of the library
stacks from the
arcade

fig. 3.45 image of a
library reading room

The classroom level is dedicated to the
students during the school operation hours.
The library and the media center, however,
is open to the public all day, and this is one
of the location where the students and the
community meet face to face. To alleviate
the security problem, access into the school
from the library is controlled from the library
is controlled through the circulation desk
at each level.
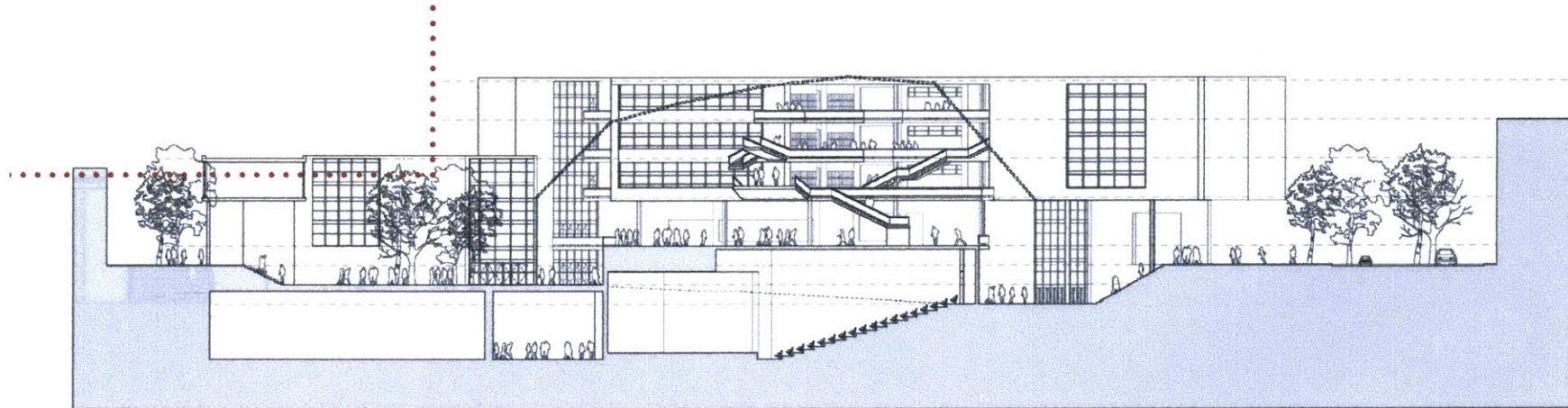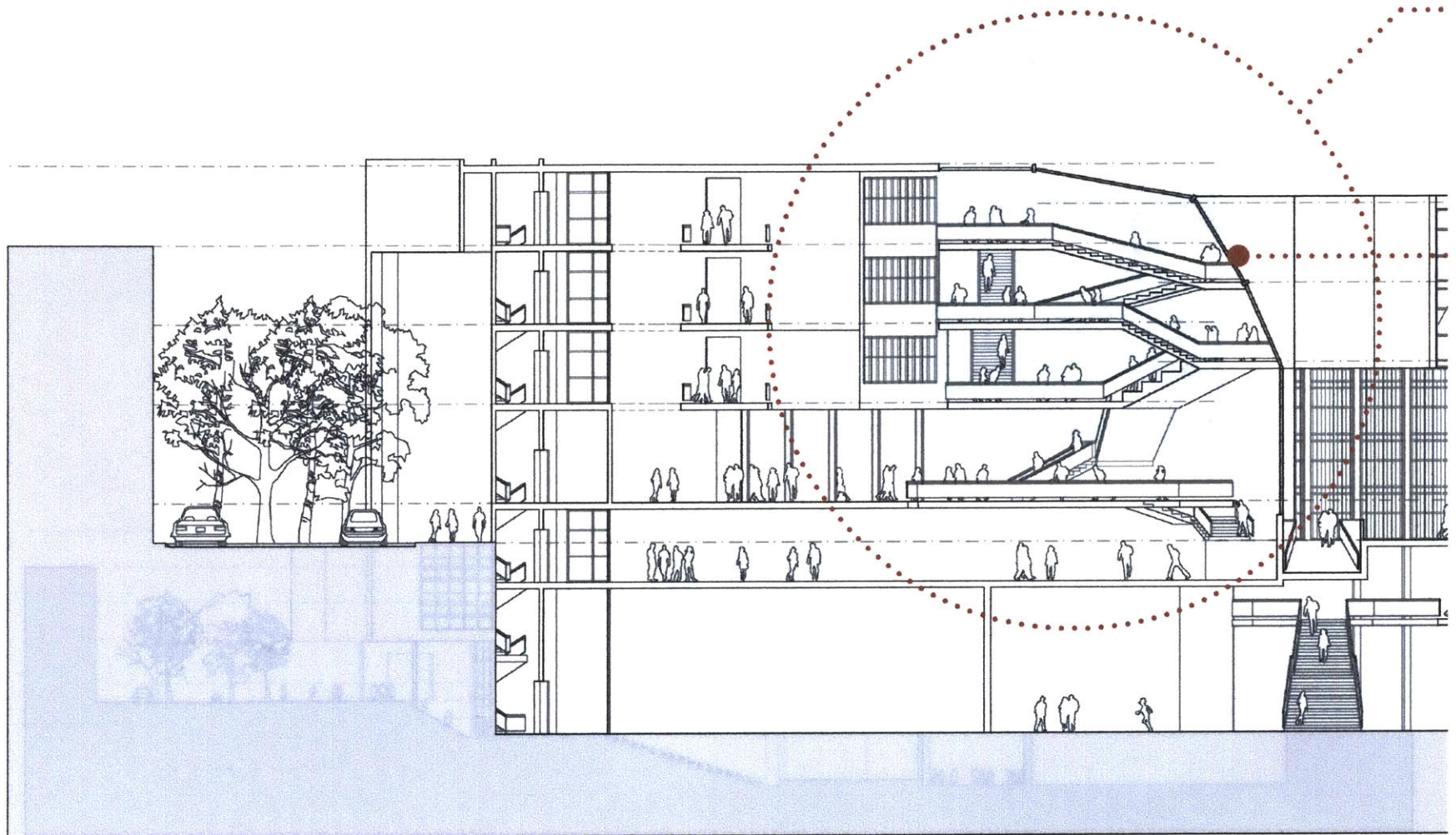
Common space is heart of the social and academic life of the students. The classroom on the east and west wing are staggered at 1/2 flights so there is greater continuity between the floors. The ramps and the steps are designed such that each level looks onto the one below. The ramp and steps can also be used in amphitheater style in small group sessions.
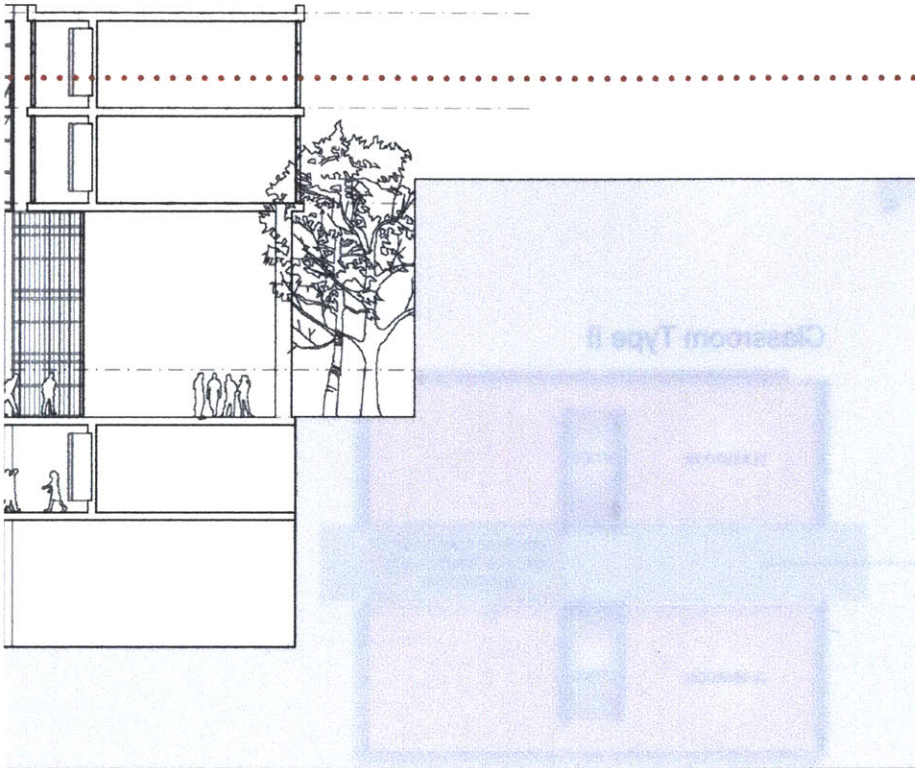

Roof of the atrium is designed to enclose the main student area as one large space. The system allows for flexible space design, and height of the roof can be controlled at different point as one continuous space. This roof design can also incorporate the smart facade system to help regulate the HVAC system. Environmentally conscience and responsible design can bring awareness of the students, leading by example.
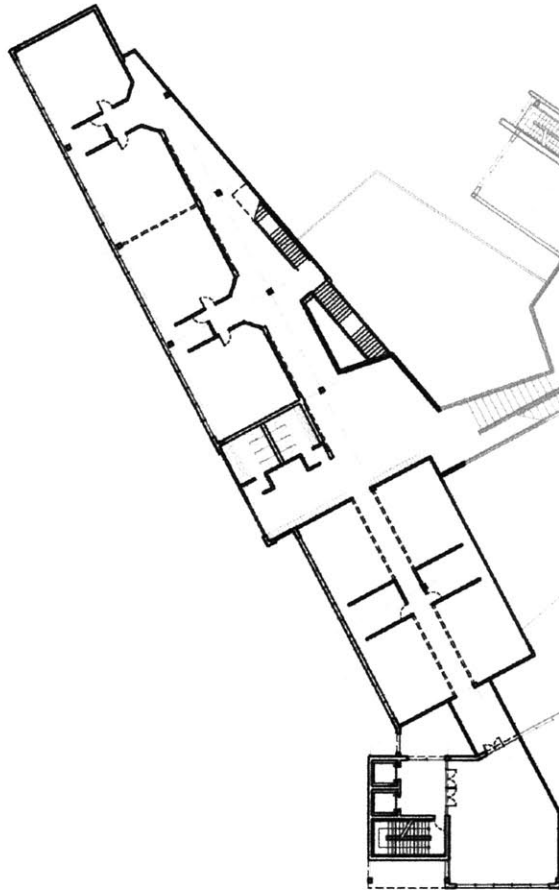
Classroom Type I

PLACEMENT OF TEACHER'S OFFICE AMONG THE CLASSROOM PROMOTES HIGHER INTERACTION BETWEEN FACULTY AND STUDENTS. THIS IS ESPECIALLY IMPORTANT IN URBAN SCHOOLS WHERE THE TEACHERS TEND TO LIVE AWAY FROM THE CITY, AND LACK CLEAR UNDERSTANDING OF THE TOWN OR THE COMMUNITY.

OFFICE

CLASSROOM

COMBINED CLASSROOM FOR LARGER SIZE GROUP INSTRUCTIONS

OFFICE

CLASSROOM

CORRIDOR

WALLS ARE DESIGNED WITH RECESS TO ACCOMODATE DISPLAY OF STUDENT WORK OR ANNOUNCEMENTS. THIS SPACE CAN BE FITTED WITH ELECTRONIC PANELS FOR INTEGRATED TECHNOLOGY INTO THE ARCHITECTURE.

OPENABLE PARTITION FOR EXTENSION OF CLASSROOM SPACE INTO THE CORRIDORS

Classroom Type II

CLASSROOM

OFFICE

THESE DOUBLE LOADED CLASSROOM CONFIGURATION IS SMALLER THAN THE TYPICAL CLASROOM SIZE. THESE CLASSROOMS, HOWEVER, CAN OPEN ONTO EACHOTHER, AND CREATE A LARGER GROUP INSTRUCTION.

COMBINED CLASSROOM FOR LARGER SIZE GROUP INSTRUCTIONS

CLASSROOM

OFFICE
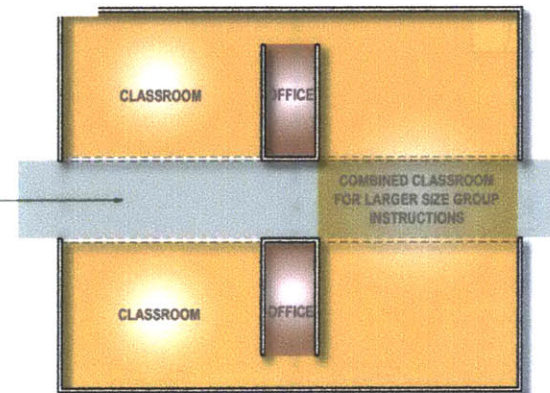
3.5   classroom configuration:

Classroom configuration is a very important part of the school design in order to create an integral learning environment. Classrooms need to be flexible in size and configuration. There also needs to be a variety of types since a single classroom type is not optimum for all types of teaching methods or teaching subjects.

In the project, there are two types of classroom clusters. In both classroom types, the classrooms are designed as module of two adjacent classrooms. These modules, then, are combined to form a cluster with flexibility in size and configuration convenient to group teaching methods.

In both types, teacher's offices are placed within the classrooms rather than segregating them into one area near the administration. Placement of teachers' office among the classroom promotes higher interaction between faculty and students. This is especially important urban schools where the teachers tend to live away from the city, and lack clear understanding of the town or the community. Two teachers in adjoining classrooms share these offices. This configuration encourages collaboration as well as exchange of resource and ideas among the teachers, and promotes team teaching method. Also by providing supply space within the offices, the teachers are always near by their resources.

Here are the two classroom types and their amenities:

Classroom Type I

Classroom Type I module (figure x.xx) consists of two adjacent classrooms joined by the teacher's office in the middle. The entrance is located in the middle, in between the two classrooms. The entrance area of a single module is the smallest node of gathering for the students. These nodes collect into larger common spaces that occur throughout the campus, as it will be further explained later.

When two modules are combined, the adjoining wall in between the modules become movable

SPACES ARE DESIGNED
SUCH THAT THE CLASSROOM
SPACES LOOK ONTO A
COLLECTIVE COMMON SPACES.
THESE COMMON SPACES,
DISTRIBUTED THROUGHOUT THE
SCHOOL, GATHER INTO A LARGER
SPACES WHERE THE STUDENT
INTERACTION AND DIALOGUE TAKE
PLACE. COMPUTER STATIONS AND
WORK TABLES ARE PLACES ALONG THESE
COMMON SPACES TO STIMULATE BETTER
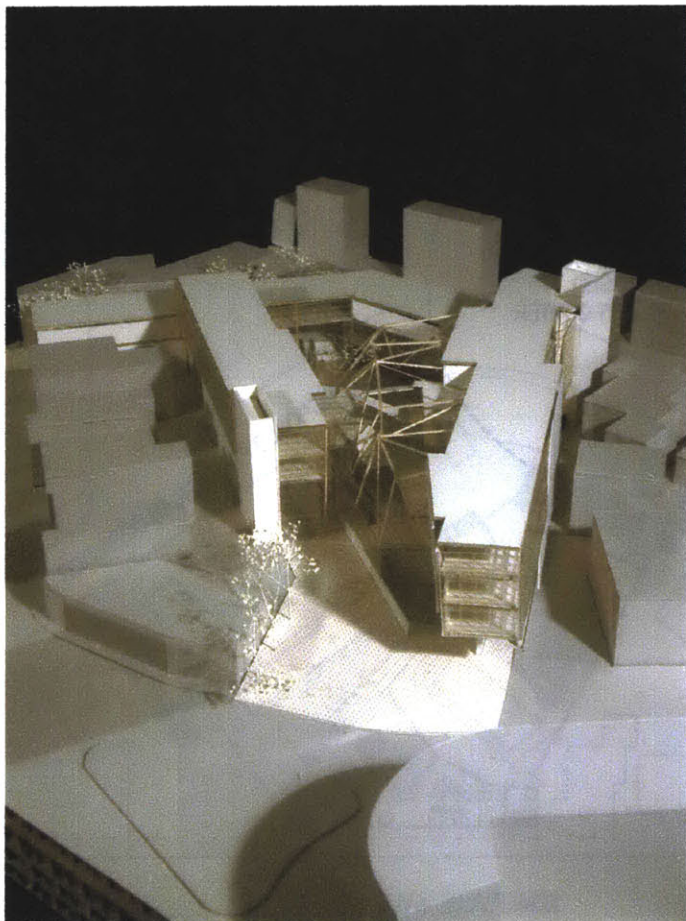LEARNING ENVIRONMENT, AND TO
PROMOTE GROUP WORK AMONG THE
STUDENTS.
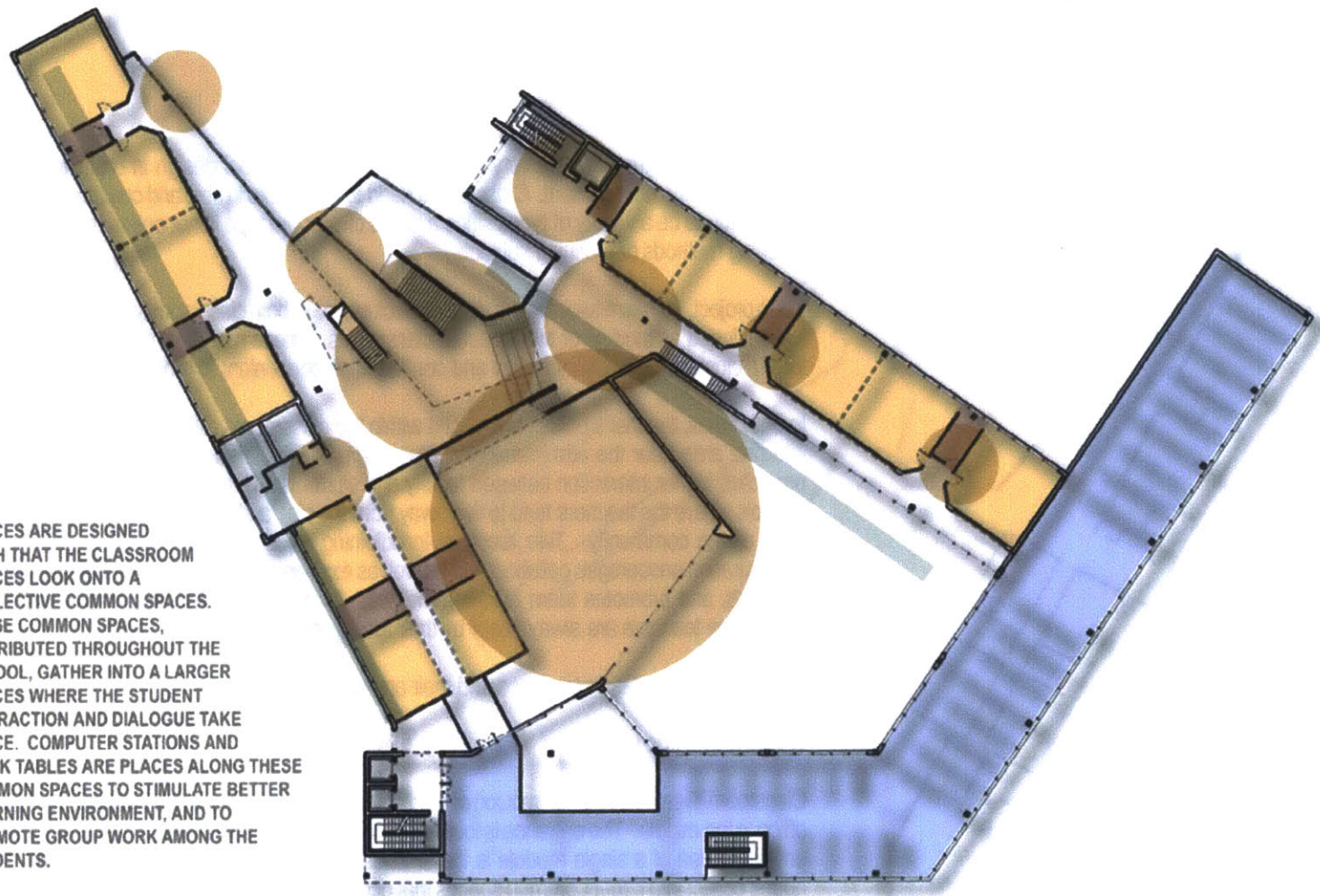
Typical classroom configuration and distribution of 'Nodes of Gathering'

partition walls, which allows for greater flexibility in size of the classroom.

Walls facing the hallways are designed with recess on the hallway side to accommodate display of student work or announcements. This space can be also fitted with electronic panels for integrated technology into the architecture. Non-media walls adjoining the hallways are roll-up doors, which can be opened to extend the classroom space into the corridor.

Classroom Type II

Classroom Type II module (figure x.xx) begin in similar configuration as the Type I modules with two classrooms joined by the teachers' office in the middle. The walls facing the corridors are made of roll-up garage doors, which can be opened to extend the classroom space into the corridors.

fig. 3.51

This double loaded classroom configuration consist of classrooms smaller than the classroom type I for more intimate learning environment. When the roll-up doors are opened, however, these classrooms can be combined to create a larger group instruction environment. Unlike the Type I classrooms, which allows for group teaching in two classrooms, the Type II configuration allows for a cluster of four classrooms for a greater flexibility in configuration.

Common Spaces

In this urban high school, spaces are designed such that the classroom spaces look onto a collective common space, or a node of gathering. The smallest node of gathering, as mentioned earlier, occurs at the classroom entrance level. These nodes, distributed throughout the school, gather into a larger space where the student interaction and dialogue take place (fig. X.xx). Computer stations and worktables are placed along these common spaces to stimulate better learning environment, and to promote group work among the students.
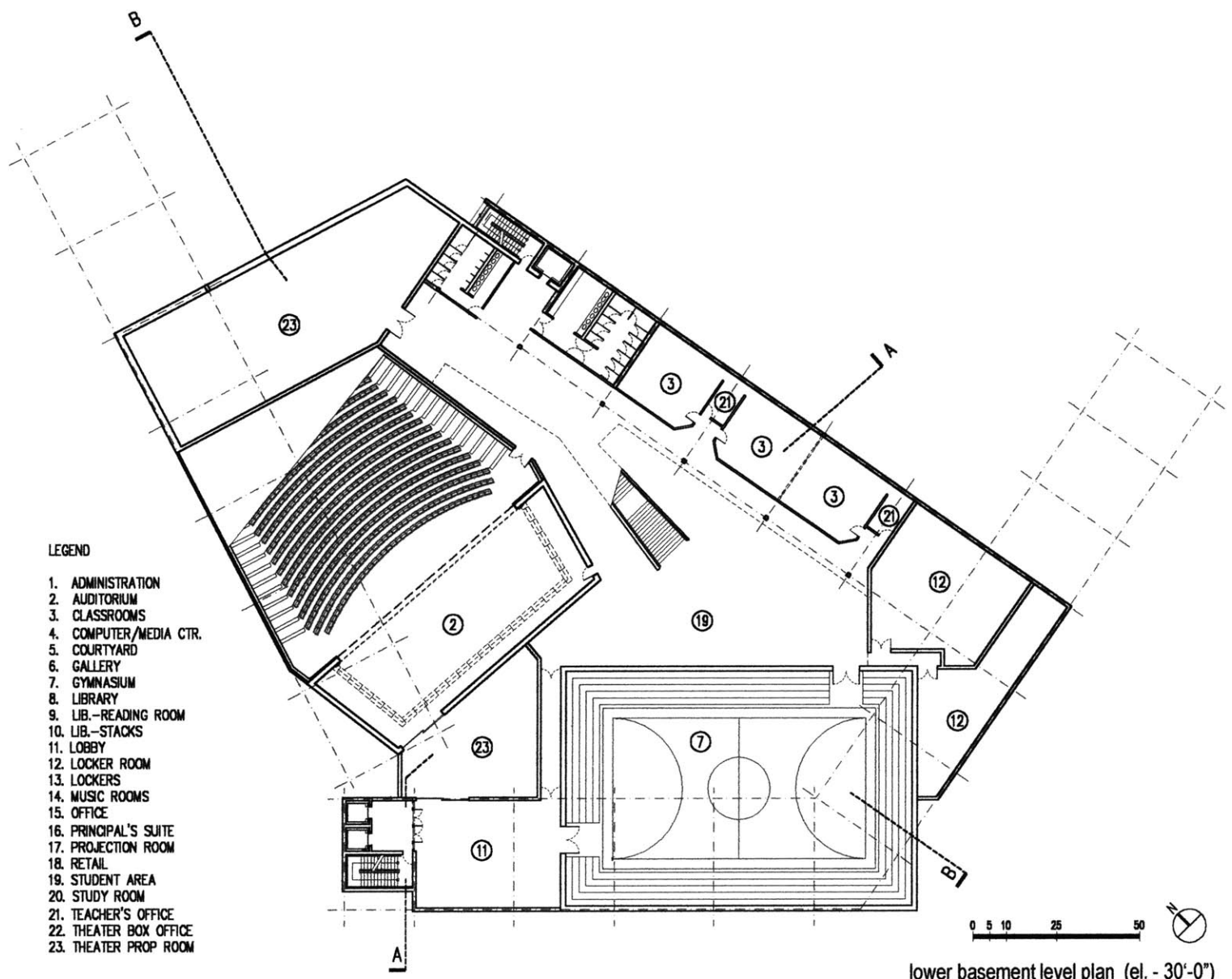
4.0   project exhibition

site study model

SUMMER STREET

PROPOSED
DEVELOPMENT CENTER

PROPOSED PEDESTRIAN CORRIDOR

BOW STREET

BOW STREET

UNION SQUARE
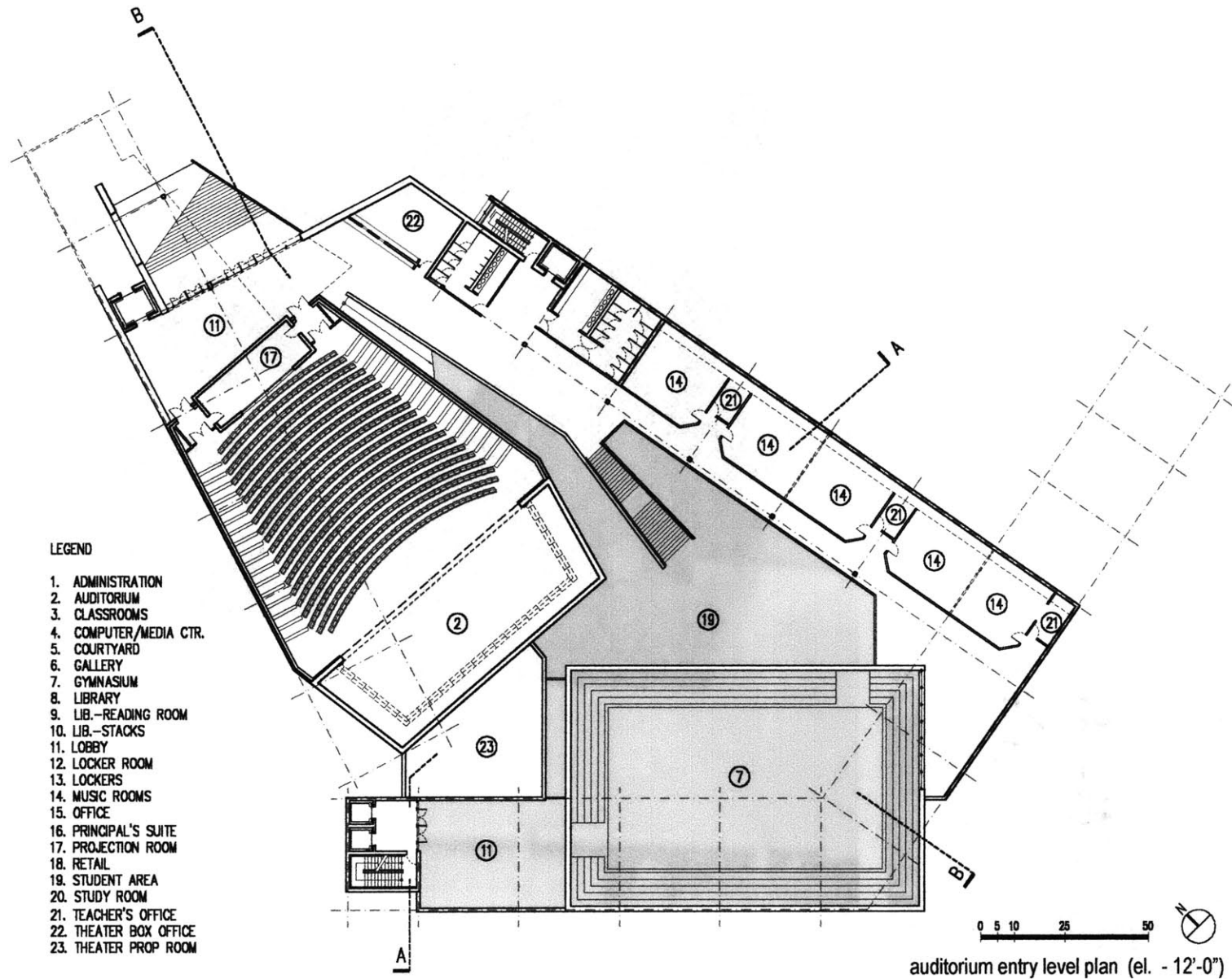
SOMERVILLE AVENUE

0 5 10   25   50
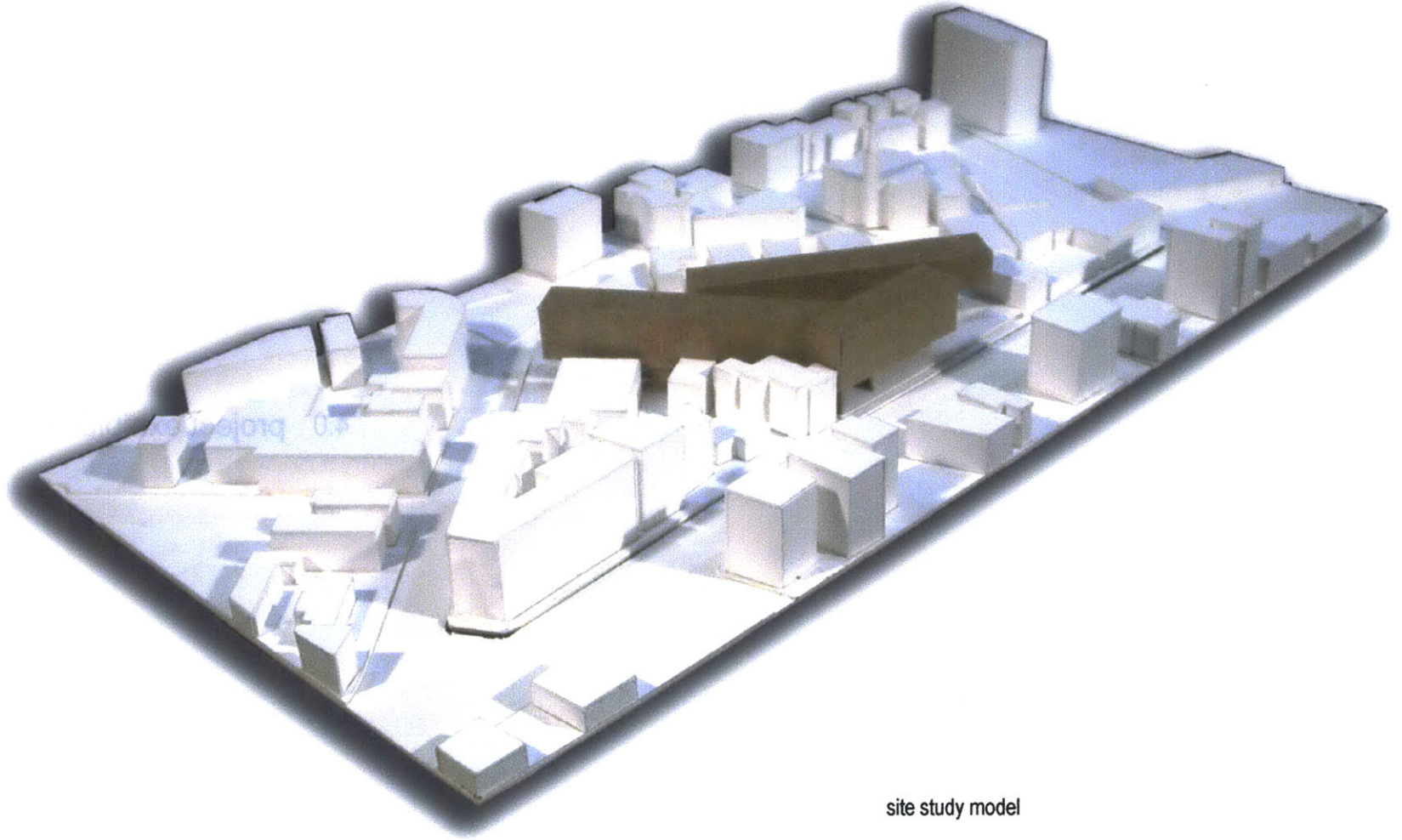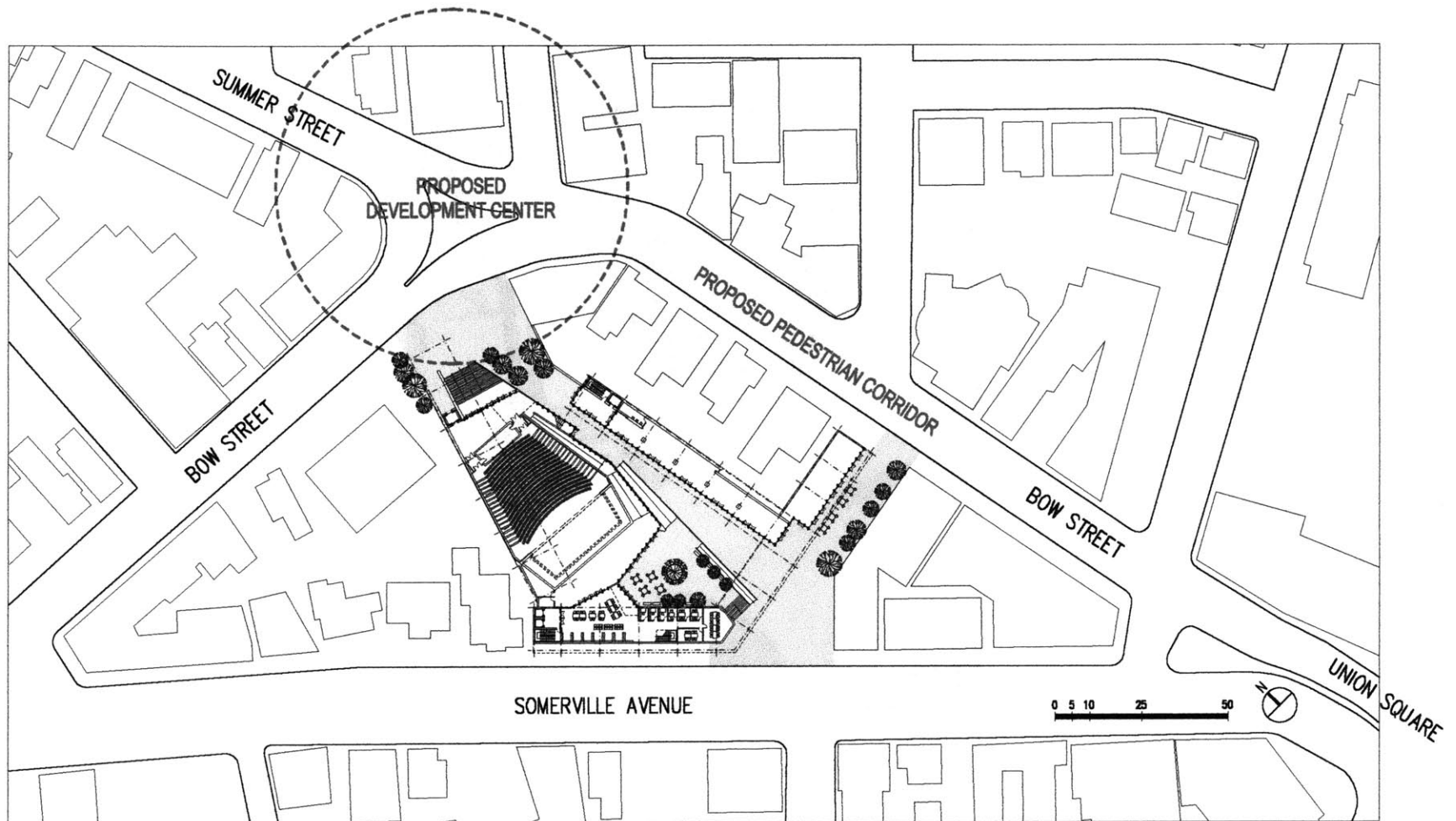
site plan
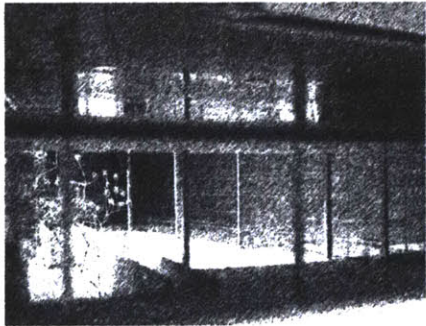
north entrance view

LEGEND

1. ADMINISTRATION
2. AUDITORIUM
3. CLASSROOMS
4. COMPUTER/MEDIA CTR.
5. COURTYARD
6. GALLERY
7. GYMNASIUM
8. LIBRARY
9. LIB.—READING ROOM
10. LIB.—STACKS
11. LOBBY
12. LOCKER ROOM
13. LOCKERS
14. MUSIC ROOMS
15. OFFICE
16. PRINCIPAL'S SUITE
17. PROJECTION ROOM
18. RETAIL
19. STUDENT AREA
20. STUDY ROOM
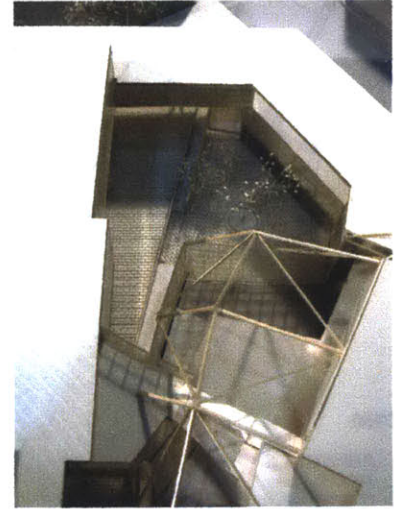21. TEACHER'S OFFICE
22. THEATER BOX OFFICE
23. THEATER PROP ROOM

0 5 10   25   50

lower basement level plan (el. - 30'-0")

syudy model - north entrance view

LEGEND

1. ADMINISTRATION
2. AUDITORIUM
3. CLASSROOMS
4. COMPUTER/MEDIA CTR.
5. COURTYARD
6. GALLERY
7. GYMNASIUM
8. LIBRARY
9. LIB.–READING ROOM
10. LIB.–STACKS
11. LOBBY
12. LOCKER ROOM
13. LOCKERS
14. MUSIC ROOMS
15. OFFICE
16. PRINCIPAL'S SUITE
17. PROJECTION ROOM
18. RETAIL
19. STUDENT AREA
20. STUDY ROOM
21. TEACHER'S OFFICE
22. THEATER BOX OFFICE
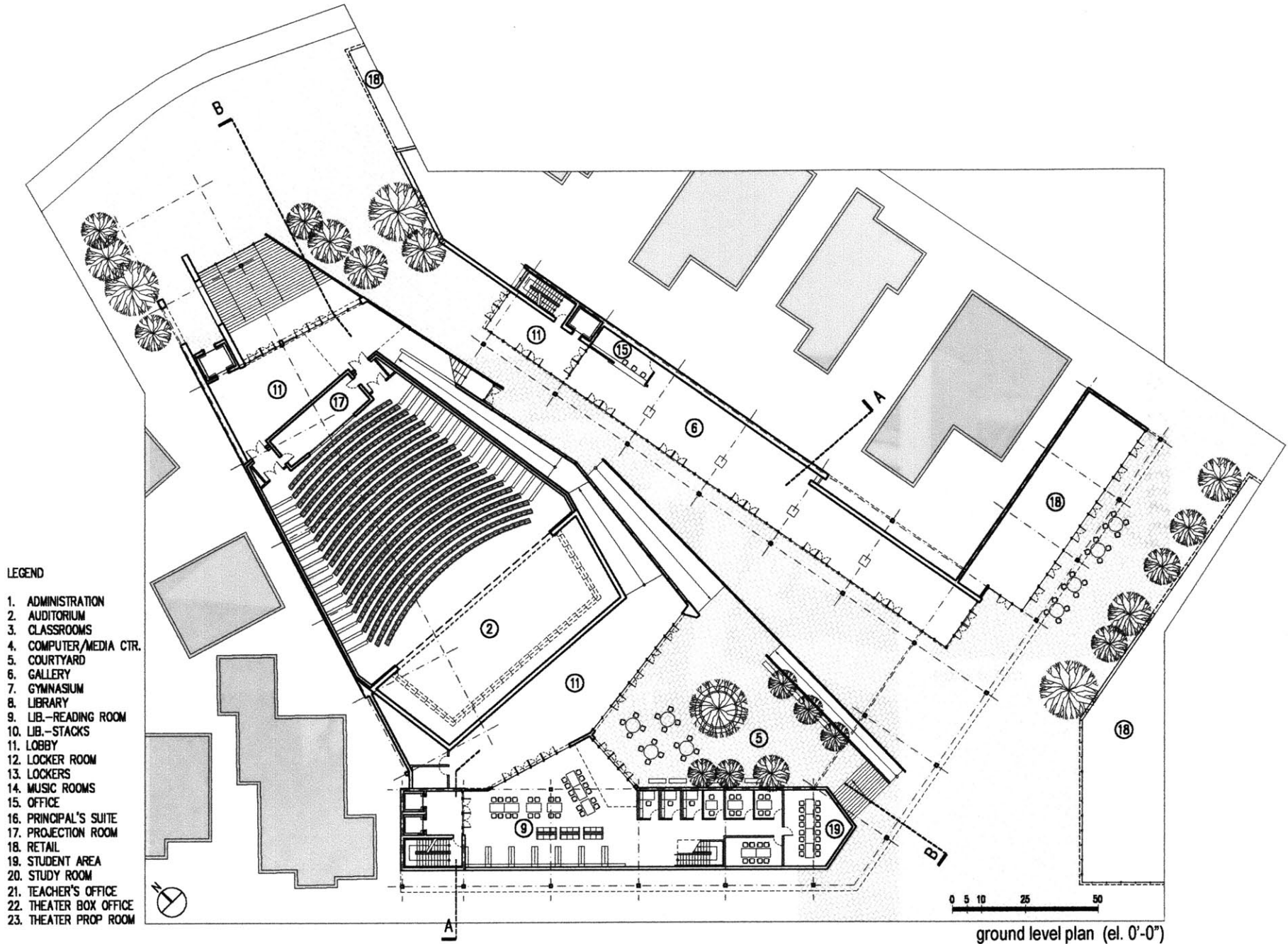23. THEATER PROP ROOM

auditorium entry level plan (el. - 12'-0")

0 5 10   25   50

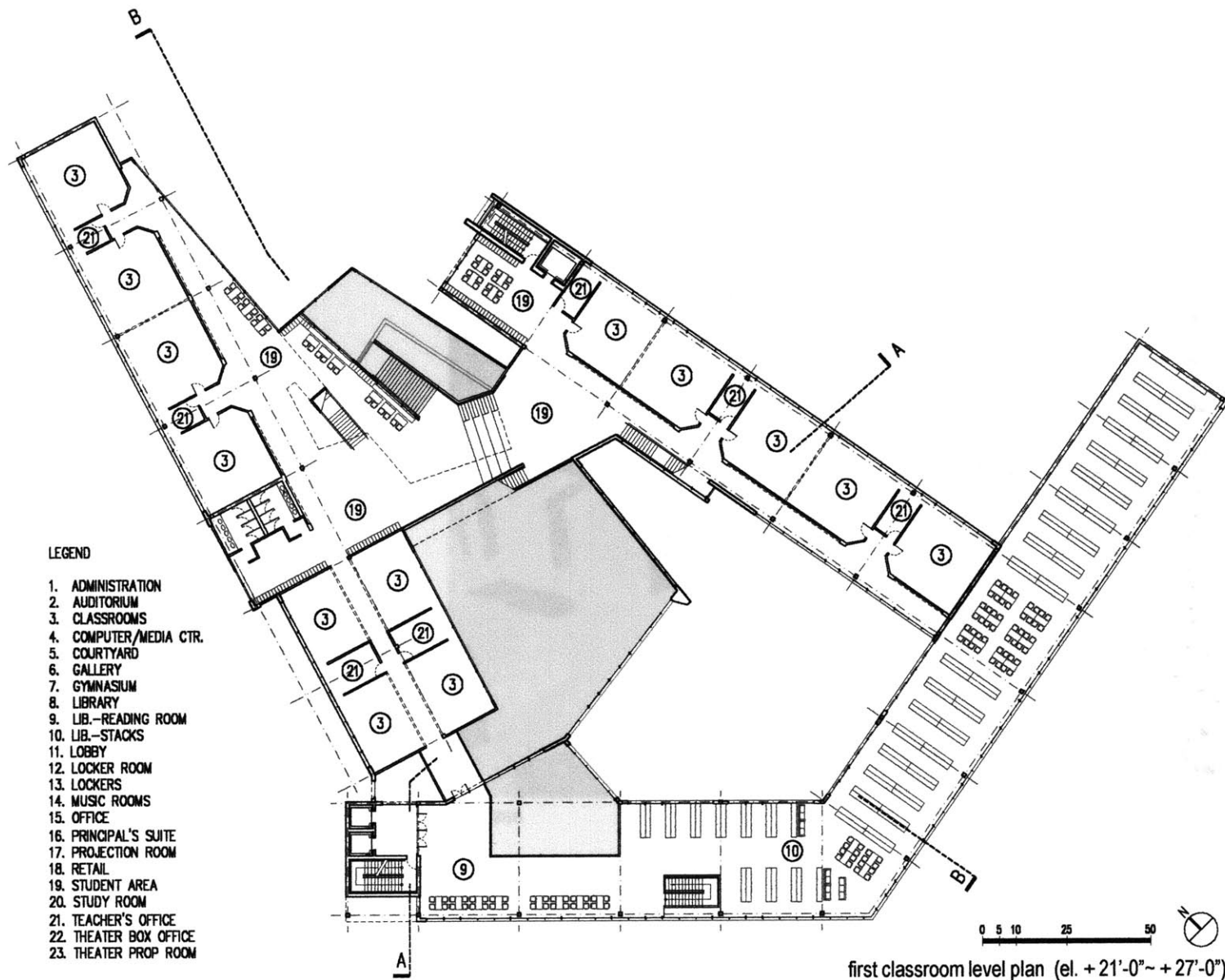view into the courtyard

courtyard from above

study model - courtyard & arcade

LEGEND

1. ADMINISTRATION
2. AUDITORIUM
3. CLASSROOMS
4. COMPUTER/MEDIA CTR.
5. COURTYARD
6. GALLERY
7. GYMNASIUM
8. LIBRARY
9. LIB.—READING ROOM
10. LIB.—STACKS
11. LOBBY
12. LOCKER ROOM
13. LOCKERS
14. MUSIC ROOMS
15. OFFICE
16. PRINCIPAL'S SUITE
17. PROJECTION ROOM
18. RETAIL
19. STUDENT AREA
20. STUDY ROOM
21. TEACHER'S OFFICE
22. THEATER BOX OFFICE
23. THEATER PROP ROOM

ground level plan (el. 0'-0")

roof structure

roof structure
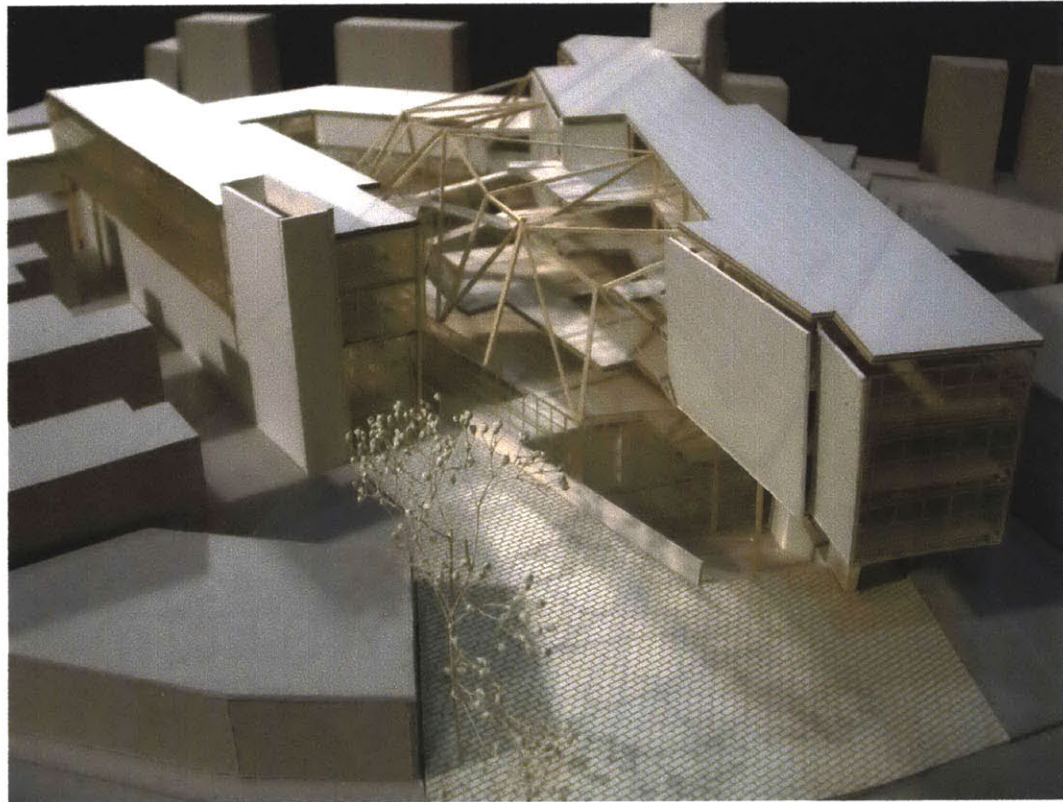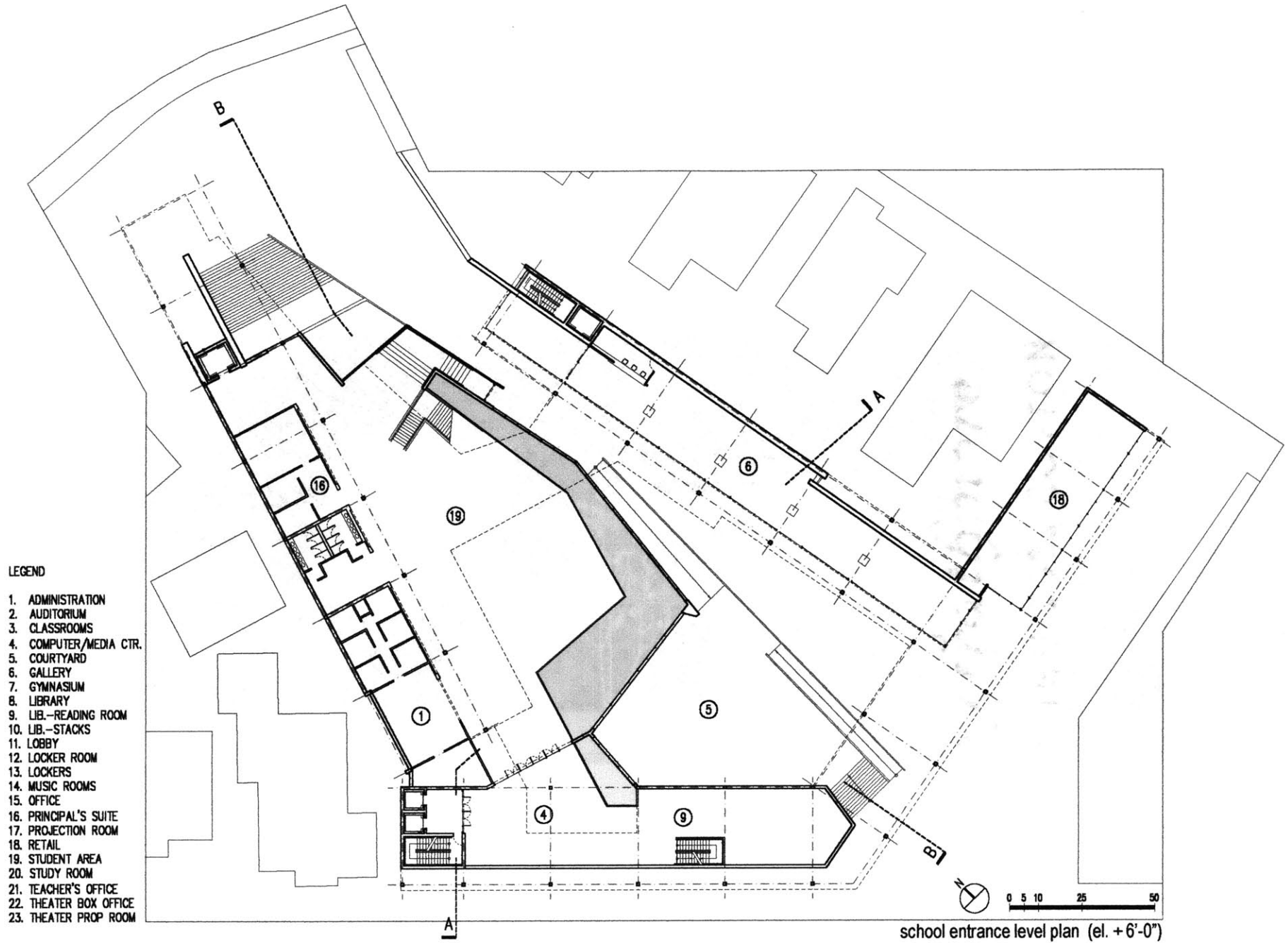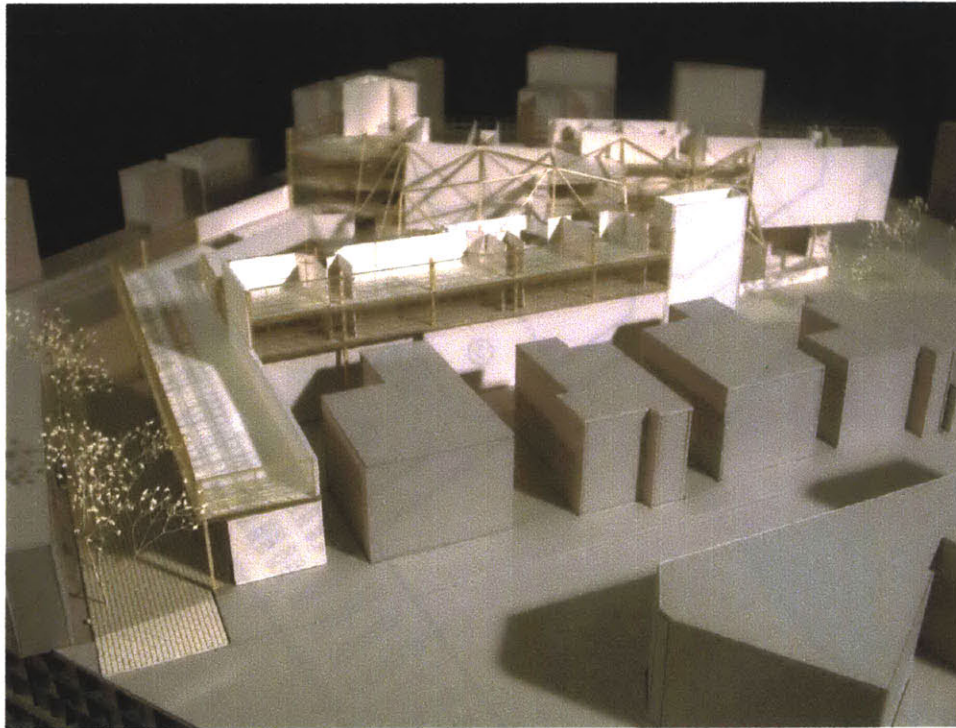
LEGEND

1. ADMINISTRATION
2. AUDITORIUM
3. CLASSROOMS
4. COMPUTER/MEDIA CTR.
5. COURTYARD
6. GALLERY
7. GYMNASIUM
8. LIBRARY
9. LIB.—READING ROOM
10. LIB.—STACKS
11. LOBBY
12. LOCKER ROOM
13. LOCKERS
14. MUSIC ROOMS
15. OFFICE
16. PRINCIPAL'S SUITE
17. PROJECTION ROOM
18. RETAIL
19. STUDENT AREA
20. STUDY ROOM
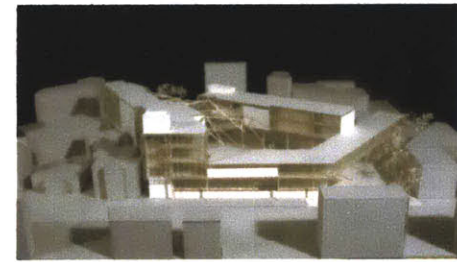21. TEACHER'S OFFICE
22. THEATER BOX OFFICE
23. THEATER PROP ROOM

school entrance level plan (el. + 6'-0")

0 5 10   25   50

south entrance - view of the library stack

LEGEND

1. ADMINISTRATION
2. AUDITORIUM
3. CLASSROOMS
4. COMPUTER/MEDIA CTR.
5. COURTYARD
6. GALLERY
7. GYMNASIUM
8. LIBRARY
9. LIB.—READING ROOM
10. LIB.—STACKS
11. LOBBY
12. LOCKER ROOM
13. LOCKERS
14. MUSIC ROOMS
15. OFFICE
16. PRINCIPAL'S SUITE
17. PROJECTION ROOM
18. RETAIL
19. STUDENT AREA
20. STUDY ROOM
21. TEACHER'S OFFICE
22. THEATER BOX OFFICE
23. THEATER PROP ROOM
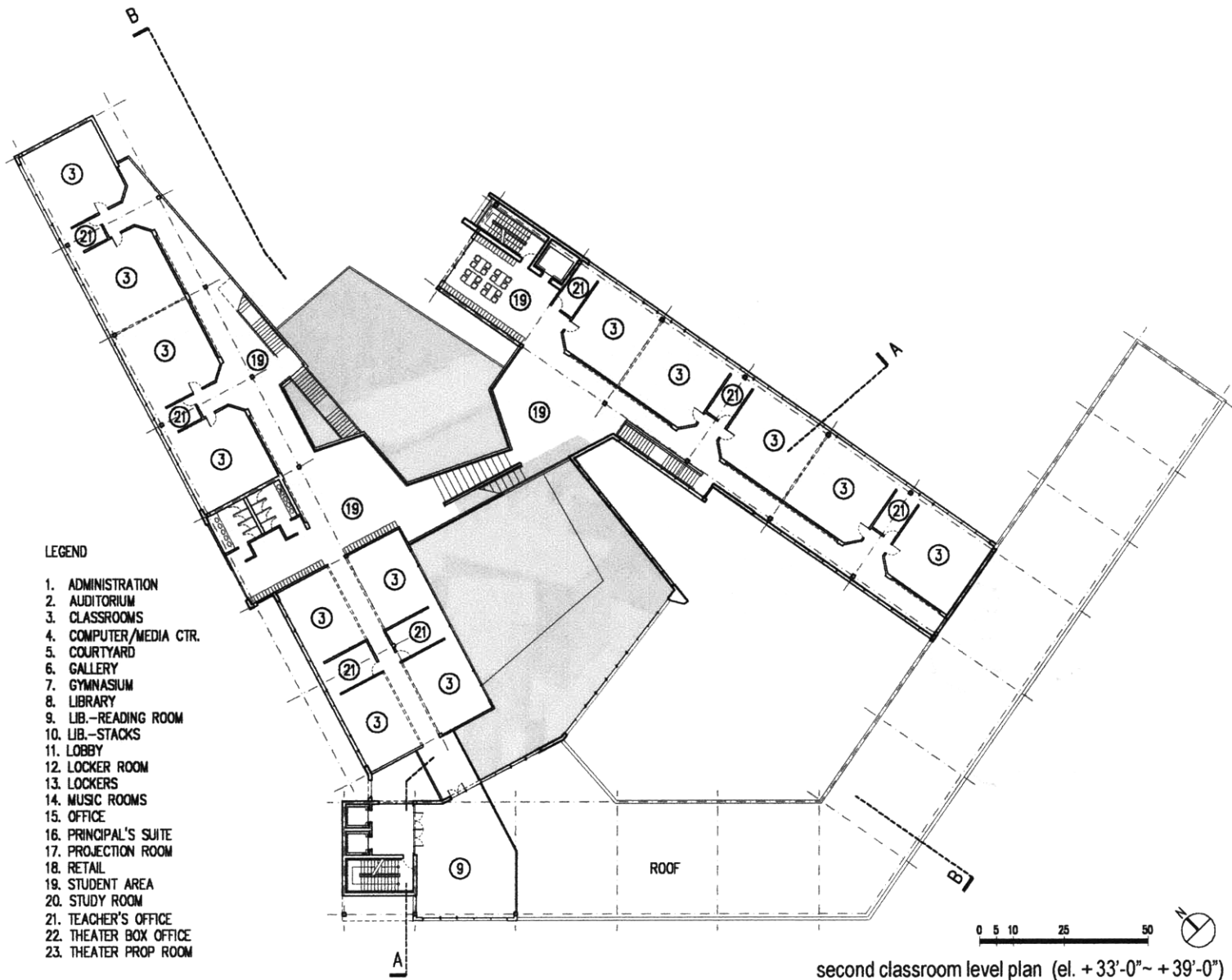
first classroom level plan (el. + 21'-0"~ + 27'-0")

0 5 10   25   50

east view

view from the somerville street

LEGEND

1. ADMINISTRATION
2. AUDITORIUM
3. CLASSROOMS
4. COMPUTER/MEDIA CTR.
5. COURTYARD
6. GALLERY
7. GYMNASIUM
8. LIBRARY
9. LIB.—READING ROOM
10. LIB.—STACKS
11. LOBBY
12. LOCKER ROOM
13. LOCKERS
14. MUSIC ROOMS
15. OFFICE
16. PRINCIPAL'S SUITE
17. PROJECTION ROOM
18. RETAIL
19. STUDENT AREA
20. STUDY ROOM
21. TEACHER'S OFFICE
22. THEATER BOX OFFICE
23. THEATER PROP ROOM

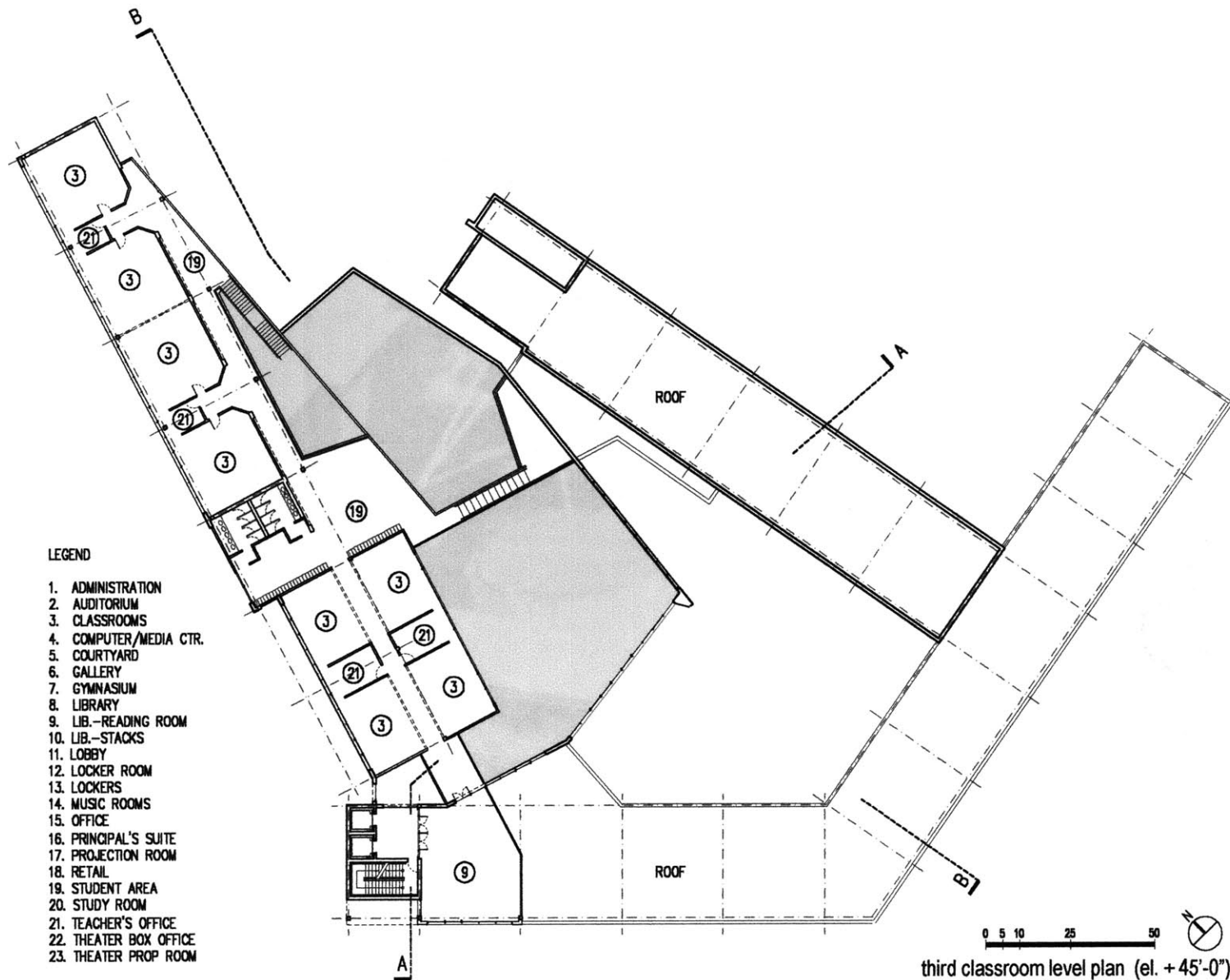ROOF

0 5 10   25   50

second classroom level plan (el. +33'-0"~ +39'-0")
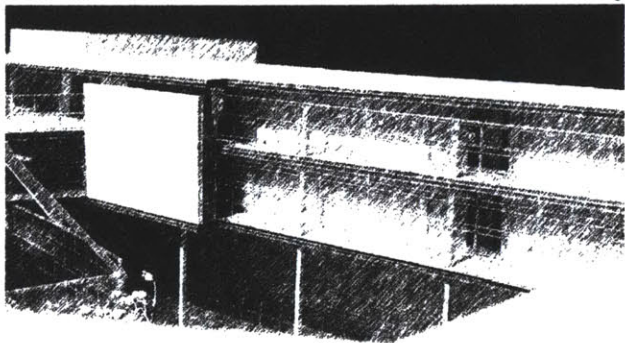
library from somerville street

west classroom wing

LEGEND

1. ADMINISTRATION
2. AUDITORIUM
3. CLASSROOMS
4. COMPUTER/MEDIA CTR.
5. COURTYARD
6. GALLERY
7. GYMNASIUM
8. LIBRARY
9. LIB.–READING ROOM
10. LIB.–STACKS
11. LOBBY
12. LOCKER ROOM
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16. PRINCIPAL'S SUITE
17. PROJECTION ROOM
18. RETAIL
19. STUDENT AREA
20. STUDY ROOM
21. TEACHER'S OFFICE
22. THEATER BOX OFFICE
23. THEATER PROP ROOM

ROOF

ROOF

0 5 10   25   50

third classroom level plan (el. +45'-0")

view of the north entrance plaza
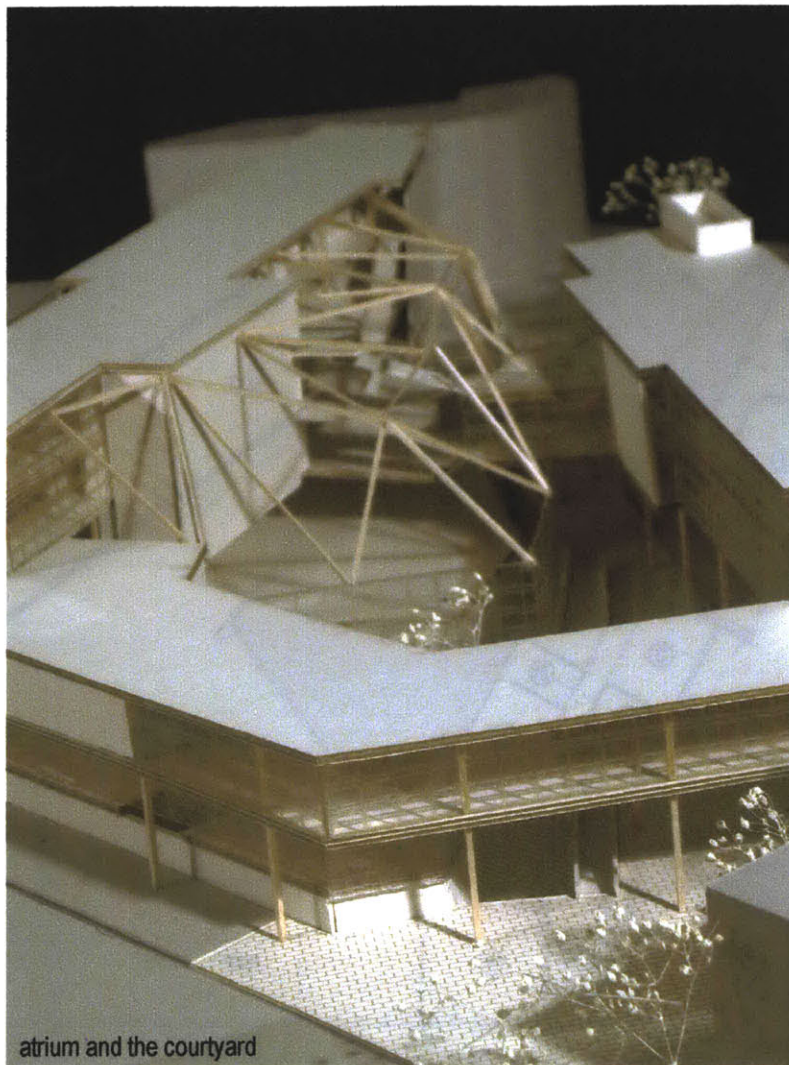
atrium and the courtyard

B

A

A

B

0 5 10   25   50

roof plan
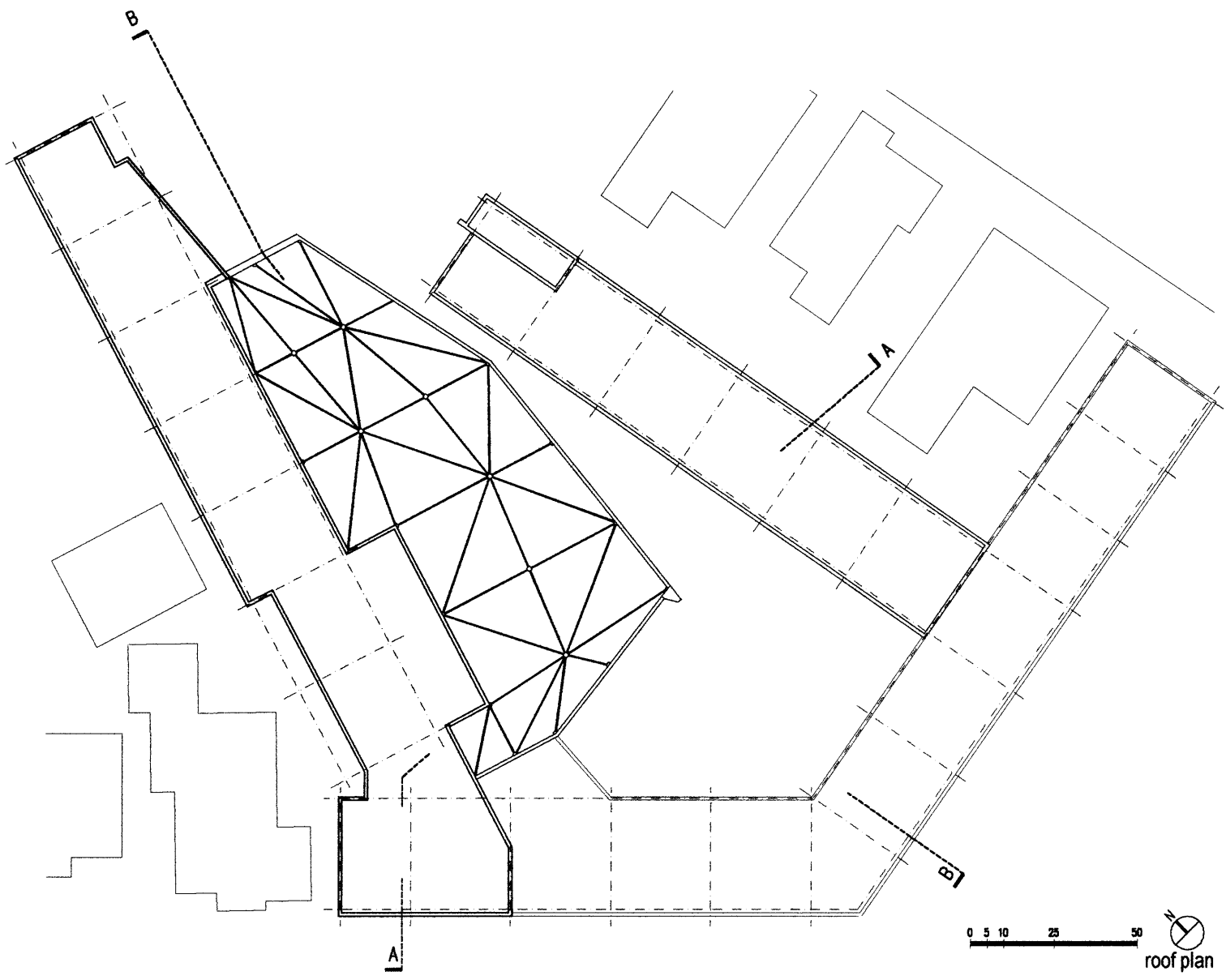
east classroom wing

view into the atrium

EL 57'-0"

EL 45'-0"

EL 33'-0"
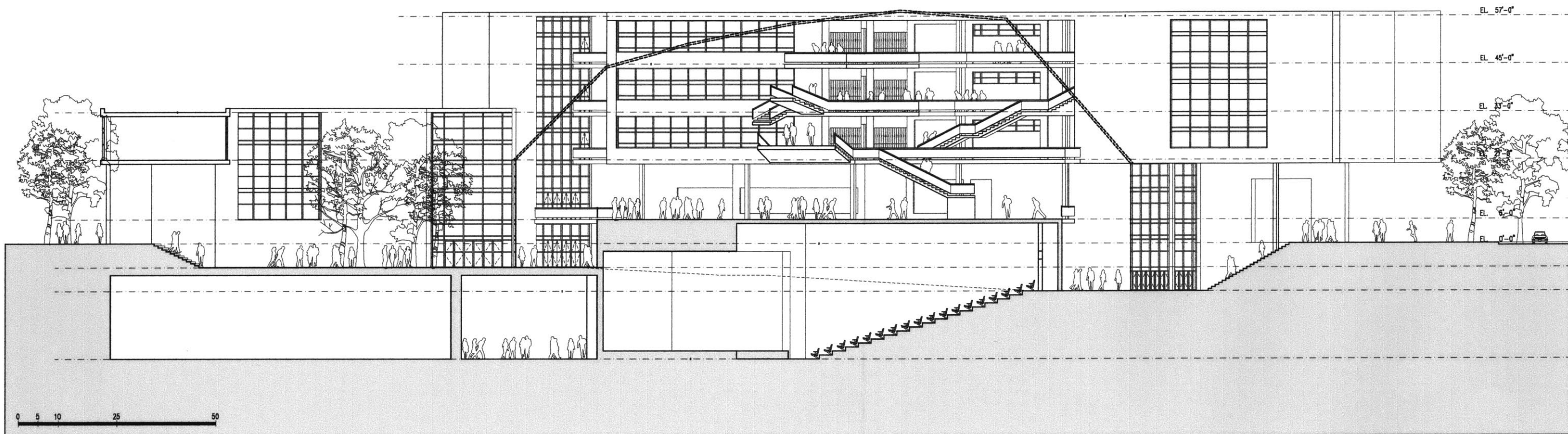
section A: north-south section

ation beyond the classroom

EL 51'-0"

EL 39'-0"

EL 27'-6"

EL 6'-0"

EL 0'-0"

0 5 10   25   50
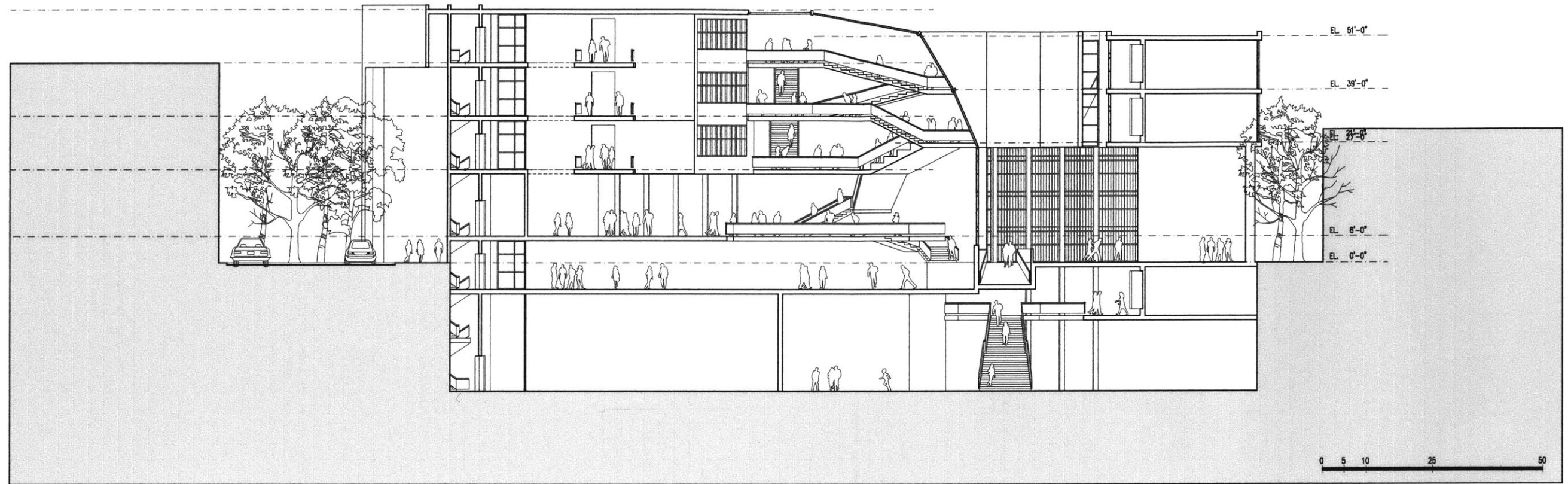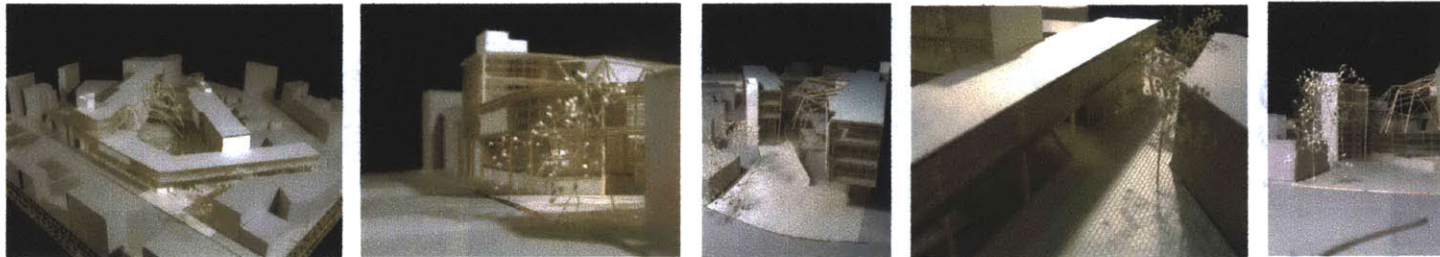
section B: east-west section

ion beyond the classroom
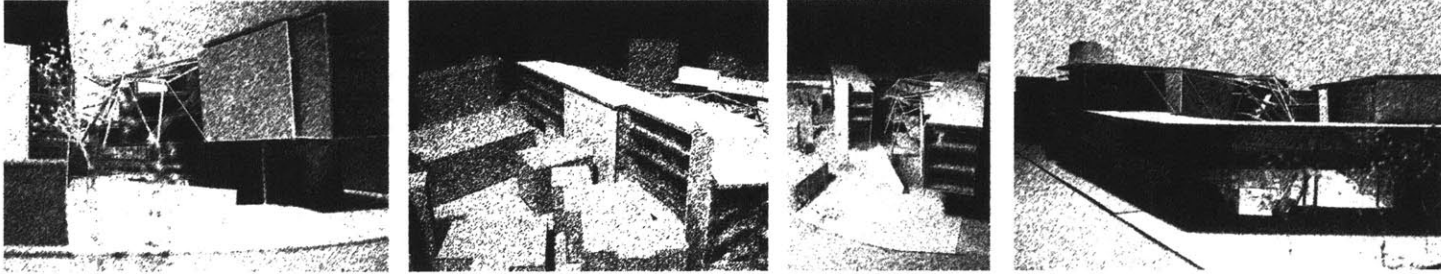
conclusion

I don't presume that I know everything about teaching, learning, or building a school. There are those who have dedicated their entire lives to education. And if anything, I have learned through this project is that there are still so much more to learn about education, and teaching,
What I also realized was that not all educational problems can be dealt with the design of a school building. The design of the school building can set the foundation for the attitude the school can take about their education, students, and the community. And yet, the building needs to be flexible enough to take on the creativity of future students and educators.

A year ago, I began the project with the idea that I was going to design a high-rise prototype of a school. After all, what better ways are there to deal with the issues of the density than building a high-rise? But I quickly decided that in order to build a school that promotes spirit, pride and a sense of community, there are better solutions than a high-rise. In the end, what was conceived is a multiple story building. But it's a multiple story building that is sensitive and respectful to its environment, that is part of its urban fabric. I could not see a highrise in its place today.

At the beginning of the project, I began with a set of rules that guide lined the important issues I wanted to deal with in this project. These have been the set of priority list that guided the design of the school building. The real challenge in this project was to follow the guidelines I set for myself early on, and not stray too far from the ultimate goal. Many times, I was discouraged by logic that failed to make sense of all the pieces. Ultimately, it was the sincere belief of the ideal that kept me faithful to the intention. And it was the rigorous persuit of these ideas that brought certain success to this project.

This school is a place for people. And this project is successful because it creates an urban school prototype and provides a place that the community can use and appreciate. This is a place that can activate the community not just educationally, but also socially and economically...a place that can make a change...a place about people.

image credits:

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Personal Resources:

City of Somerville Planning Department

Web Resources:

http://www.ci.somerville.ma.us/
http://www.somervillema.org/
http://yourtown.boston.com/town/somerville/

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