

**A TOWN FOR 3000 PEOPLE:
A HIGH SCHOOL
IN BOWIE, MARYLAND**

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approved by

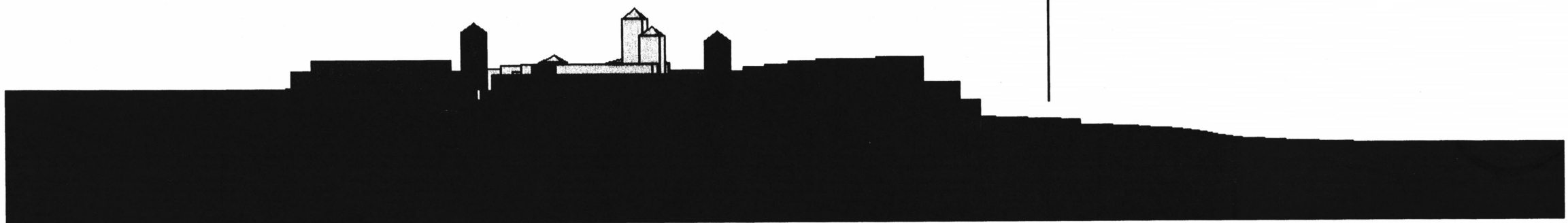
Eugene Egger, Chairman

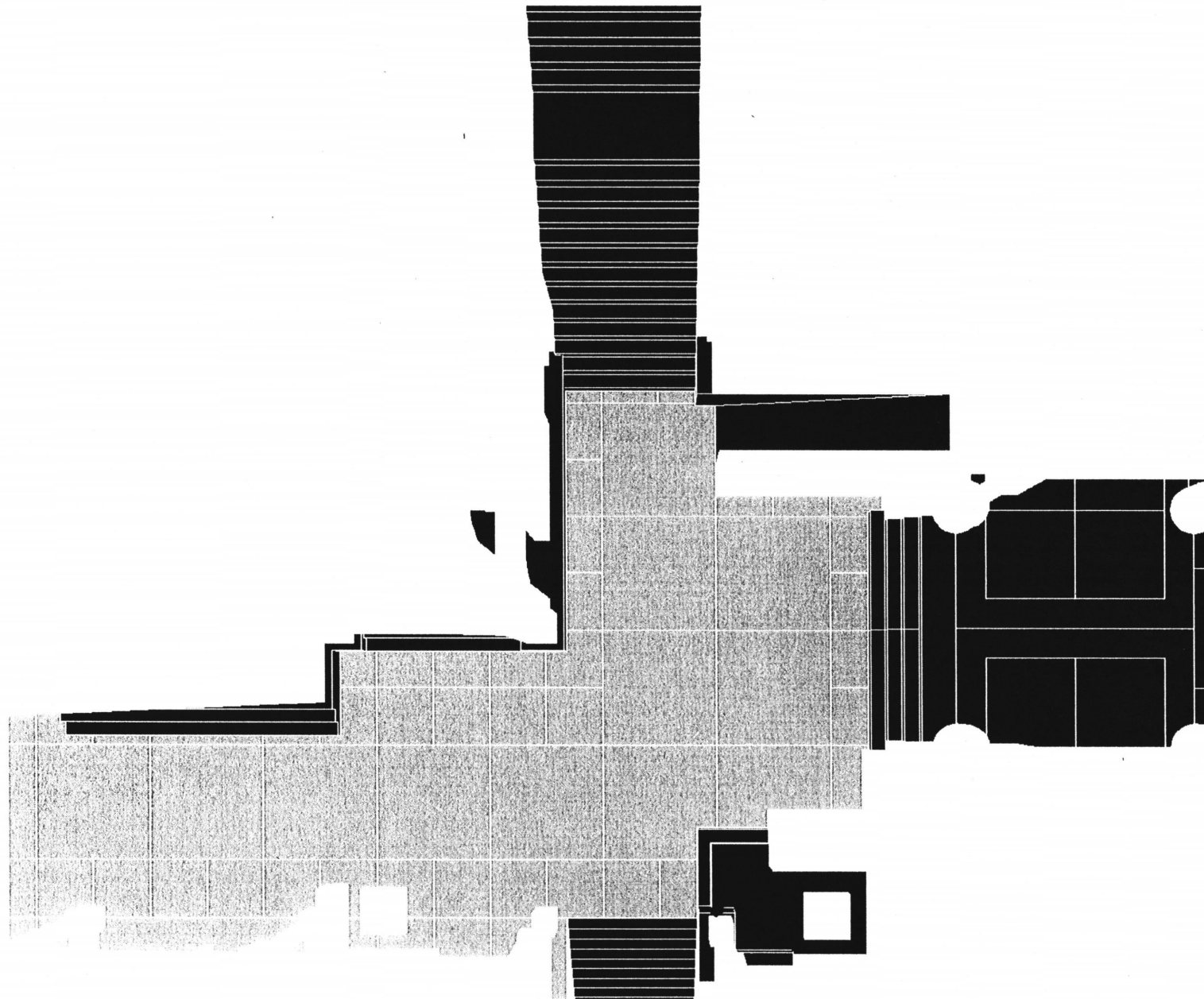
Michael O'Brien

William Galloway

Blacksburg, Virginia

December 1993



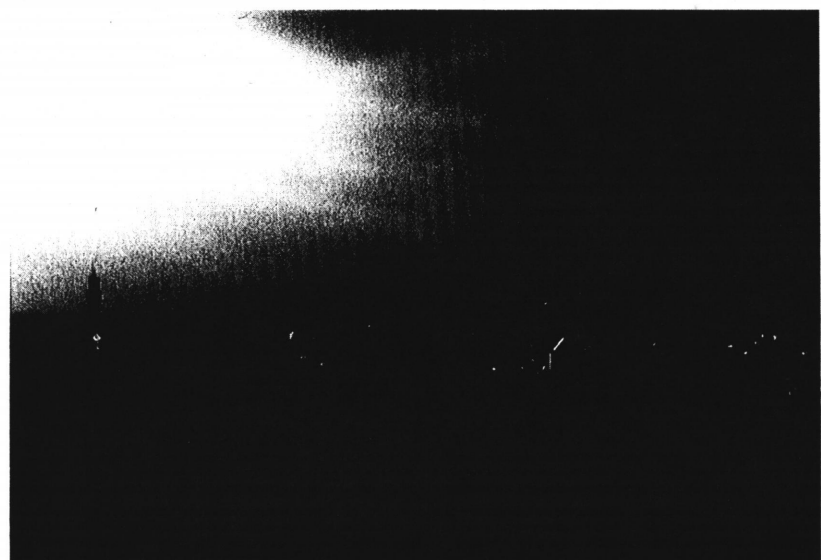


Library Plaza Floor

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Abstract



The thesis is about the creation of an urban environment or a small town. First the medieval town is investigated - the spaces, interrelationships and elements that make a successful urban environment. Second, a high school is designed using this criteria to create a high school that is in fact a town.

Florence



A TOWN OF 3000 PEOPLE: A HIGH SCHOOL IN BOWIE, MARYLAND

An urban high school in Maryland has an average population of 3000 students, with teachers, administrators and staff. For six hours a day students attend classes. During this time, students also eat lunch at the cafeteria, spend study hall at the library, exercise at the gym, and practice for concerts. After school many students participate in activities - athletic practice, academic clubs and special interest groups. Then the school's night life begins - community college courses, seminars, sports games, play rehearsals and concerts.

These daytime and nighttime activities require many different spaces. They require classrooms, an administration office including a guidance suite and a health suite, a library, a cafeteria, a gymnasium and an auditorium. Indoor and outdoor, large and small gathering places are needed for the many other activities taking place at the high school. Spaces are needed for selling yearbooks, dance tickets, for club meetings, for cheerleading and drill team practices, for informal study sessions, and for afternoon band rehearsals.

The range of activities, day and night, and the different populations using the high school create a very diverse environment - an urban environment. The high school becomes not a single building, but an arrangement of many buildings - a small town. A town of workers, bosses, librarians, counselors and restaurateurs. A town with offices, libraries, restaurants, athletic centers, theaters, and a town hall. The connector of these elements, the hallways of the school, are the town's streets. Small plazas, large plazas, indoor and outdoor provide gathering places for the high school's many activities.





What type of town does the high school become? The high school is small, dense and pedestrian. Outside the high school are the parking lots and athletic fields - an open landscape of paving and grass. Typically there is no transition between the two environments, only the outer walls of the high school. These characteristics suggest the medieval or Italian hilltown which is also small, dense, pedestrian and with an outer wall separating the town from the rural landscape.

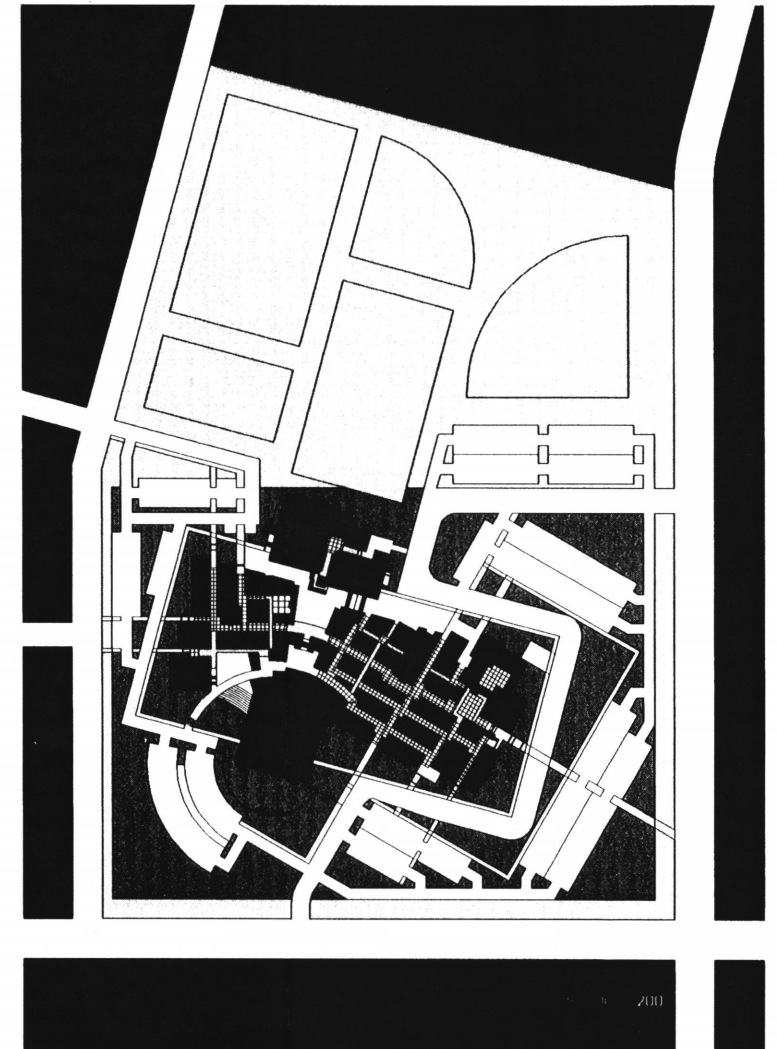
The thesis is first the investigation of the medieval town, of the spaces, interrelationships and elements that make a successful urban environment, and second the design of a high school using this criteria to create a high school that is in fact a town.

POPULATION COMPARISON

3000 students.....	workers
teachers.....	supervisors
administrators.....	executives
librarians, counselors.....	supporting agencies
cafeteria workers.....	restaurateurs

BUILDING TYPE COMPARISON

classrooms.....	offices
administration.....	town hall
library.....	library
cafeteria.....	restaurant
gymnasium.....	athletic center, stadium
auditorium.....	theater
hallways.....	streets



THE MEDIEVAL TOWN

The medieval town is comprised of three types of spaces - the street, the plaza, and the support space. The elements creating these spaces, and the relationships between the spaces create a very successful urban environment. A particular type of town is used as the model for the high school - the linear town. In the linear town, such as Assisi, level streets follow the topography of the hill and narrow streets with stairs climb the hill, connecting the level streets to each other.

Spaces and Interrelationships of a Medieval Town

The three major types of spaces in a medieval town - the street, the plaza and the support space, and the relationships between these spaces are equally important. For the identity of each space is partly derived from the differences and relationships with the others.

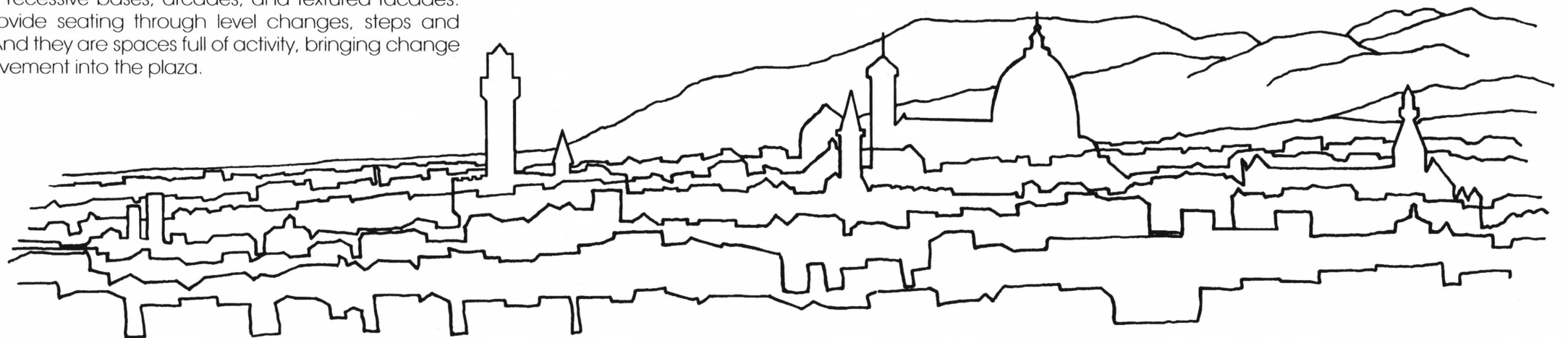
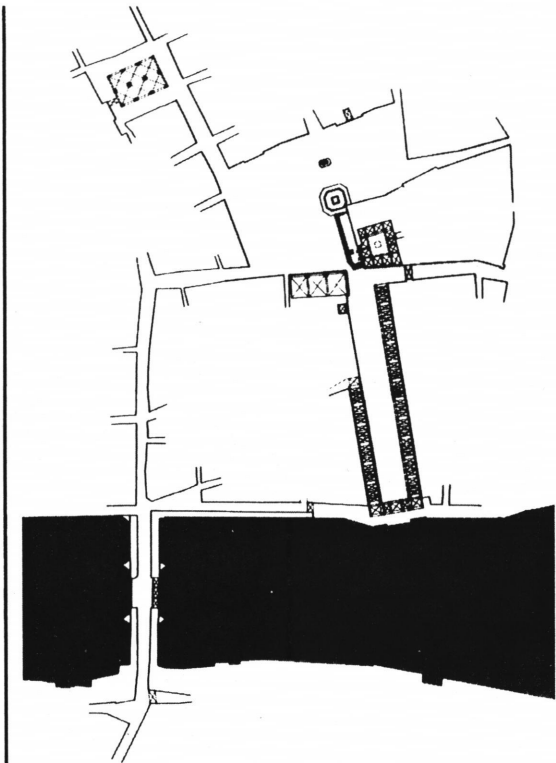
The street is defined by its walls and its movement. The walls of the street are the buildings; its movement is created by anticipation of an event, the plaza. It is difficult to discuss the street alone, without discussing its relationship to the plaza. Streets end in plazas, exit from them. The anticipation of the street ending in a plaza, whether that happens or not, creates movement and direction. The street skyline can be followed to the plaza. To create this anticipation, to invite one to continue down the street, anticipatory scenes are created such as curved walls, ground level arches, or a view of a tower just before the plaza is reached.

The plaza space is defined by its sense of enclosure. There is a definite in and out to them. They are the centers of town life, housing the important civic functions of the town. They are the culmination of the street, providing a dramatic contrast from the narrow, dimly-lit street in their open, brightly-lit spaces. The plaza is articulated through focal points, usually the civic buildings or churches, and through axes created by these focal points. Plazas manipulate light through recessive bases, arcades, and textured facades. They provide seating through level changes, steps and bases. And they are spaces full of activity, bringing change and movement into the plaza.

The support space is a secondary space, a transitional space. It is transitional in function between the public plaza and the private building. It is also transitional in scale between the narrow street and the open plaza. A glimpse of the courtyard, the support space, through the building creates the same anticipatory relationship as between the street and plaza, at a smaller scale.

Elements of a Medieval Town

What makes these spaces successful? The elements that define the walls of the buildings, which then define the streets. Elements that strengthen the impact of a curve in a facade. Elements that manipulate light. Elements such as level changes, axes, focal points. The occurrence and reoccurrence of these elements make each space successful. By defining these elements, one creates a list of elements for good urban design.



Piazza della Signoria, Florence
Florence



The following "list" comes from two sources: my own experience of the medieval town, its streets and plazas, and from Julie Ann Kephart's thesis, *Accomplished Space: The Italian Piazza*.

Plazas have a unique level in the medieval town. One must always step up or step down to enter or exit the plaza.

Plazas always have a focus - a civic building, a church, a monument, a fountain. They can have more than one focus, where one focus such as a fountain can frame another and direct the viewer to the dominant structural axis.

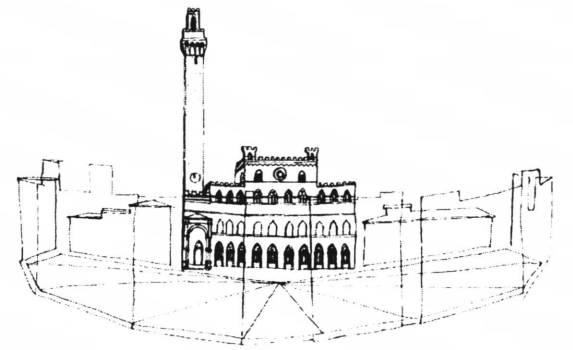
Each plaza has an axis. Different types of axiality are intersection, termination, focal, and centralized.

The main buildings bordering the plaza each have their own level respective to the plaza. The height change provides a visual guide to important places.

Steps are multifunctional. They create bases for civic buildings, churches, monuments. They create height changes and they create seats.

The differentiation of shadow against sunlit areas creates an interplay of light and shade. The arcade becomes a shadowed recessive base against the sunlit wall. The shadow of a tower moves across the plaza and the buildings partially shade the plaza throughout the day.

Movement and change in the plaza have many forms - water, shadows, birds, people, tables, the use of civic buildings, performing arts, and general pedestrian traffic.



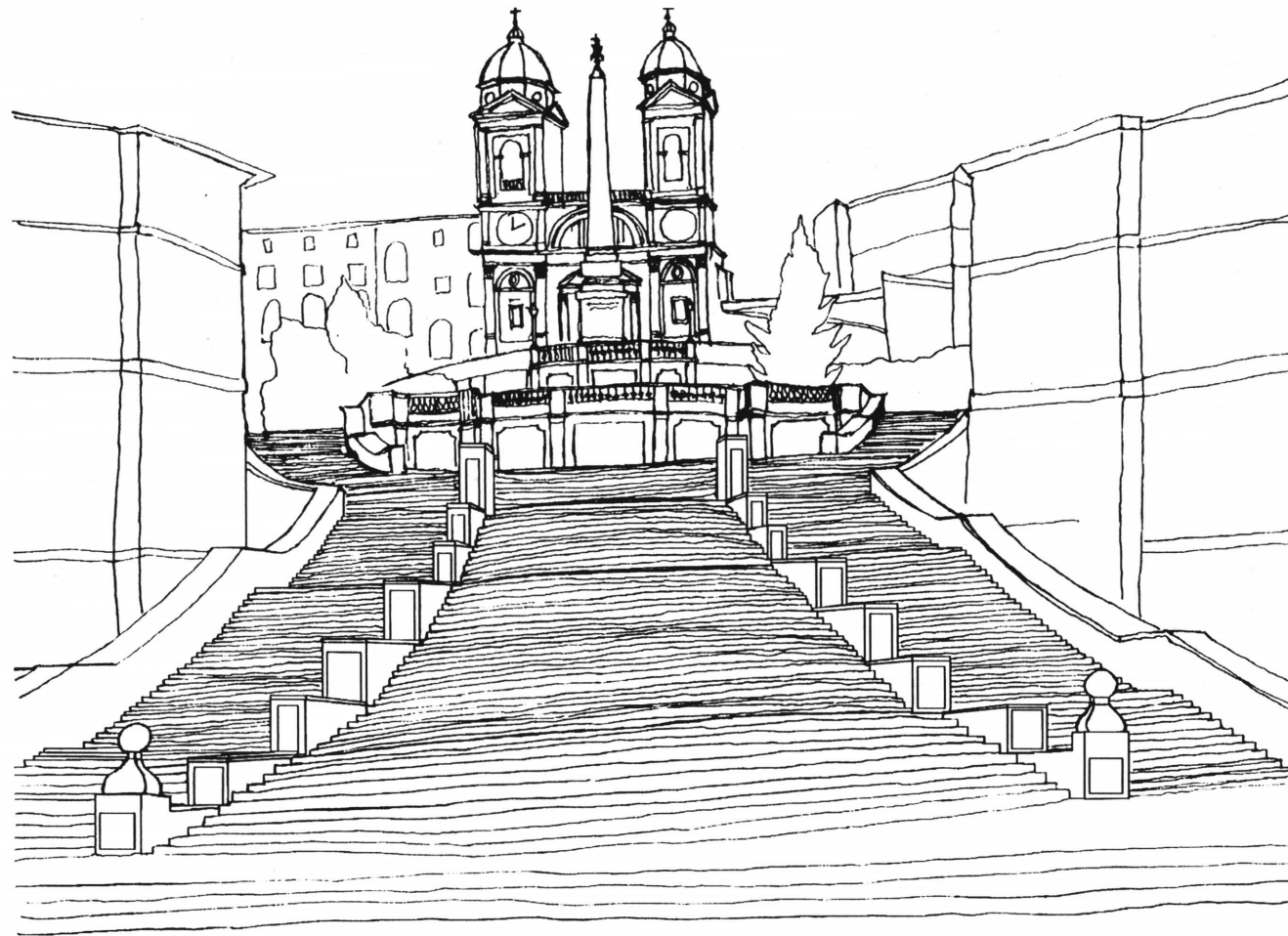
Abstracted section of a hilltown, Norman Carver, *Italian Hilltowns*

Diagram of Florence's plazas, Edmund Bacon, *Design of Cities*

Piazza del Campo, Siena

Street Entrance
Piazza del Campo, Siena





There are several forms of cover - arcades, colonnades, overhangs and entrances.

Towers and arches create entrances. Arches over streets frame and block views, creating an entrance. Arches frame views of the plaza.

The darkness of the street is a direct contrast to the light of the plaza - the closed street versus the open plaza.

The building always has a relationship to the sky - in its eaves, towers, and skyline. Roof eaves create a line of shadow between the wall and the sky.

Window openings have many opposing forms - arched / rectilinear, glazed / open-air, inset / shutters out. Lintels are often defined in a different material.

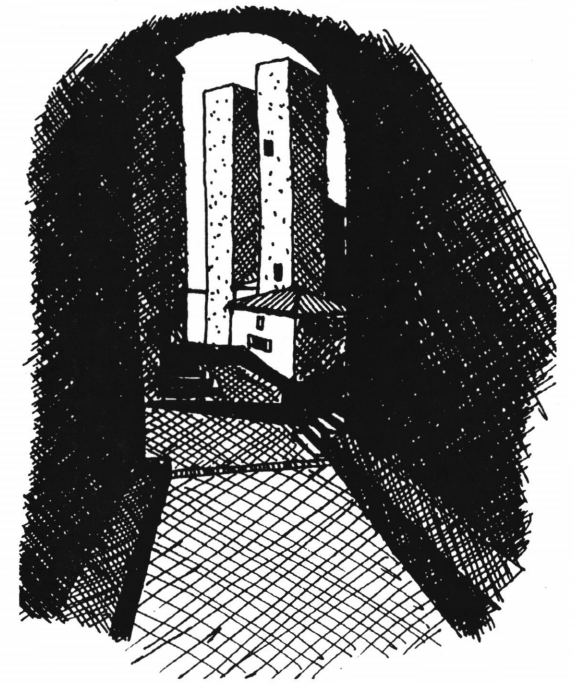
Doors are often a step above the street. Doors are arched, inset, outset, or shadowed.

The various shapes and sizes of the buildings, the patterns of the floor and walls, the colors, the shape of the plaza provide many textures.

Horizontal bands in walls give the street direction and create shadows.

Lamps and street signs provide variety, color and intrude into the space of the street.

Plants, vines and flowers add color, texture and seasonal change.



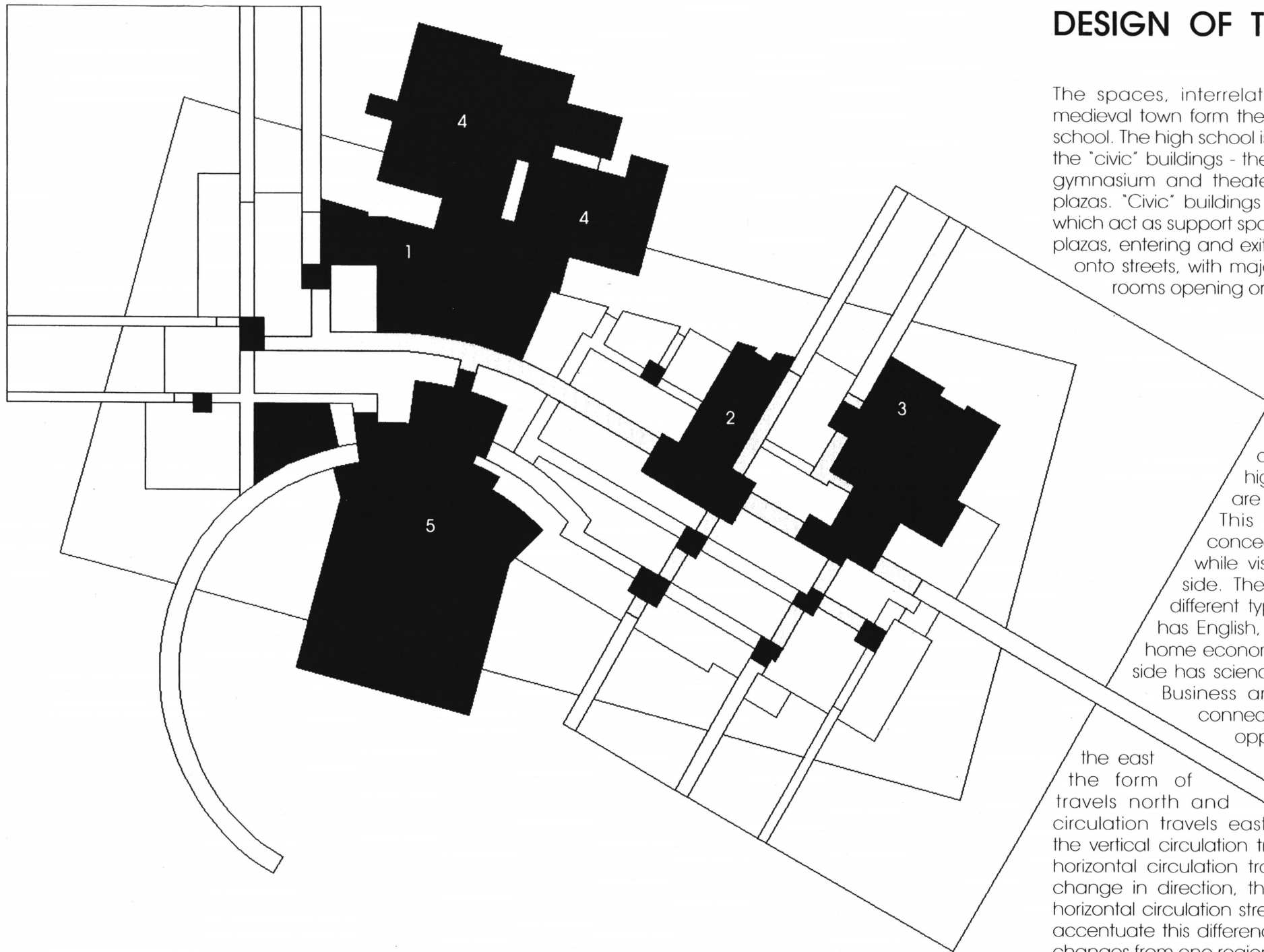
Spanish Stairs, Rome
Assisi Street
Sienna window view



San Gimignano
Assisi view

DESIGN OF THE HIGH SCHOOL

The spaces, interrelationships and elements of the medieval town form the basis for the design of the high school. The high school is designed as a linear town where the "civic" buildings - the administration, library, cafeteria, gymnasium and theater, become the focal points for plazas. "Civic" buildings have interior "courtyard" spaces which act as support spaces. Streets are linear and lead to plazas, entering and exiting from them. Classrooms open onto streets, with major classrooms or special purpose rooms opening onto plazas.



The Town

Two outdoor plazas, the gymnasium / administration plaza and the theater plaza, divide the high school into two regions which are connected by one indoor street.

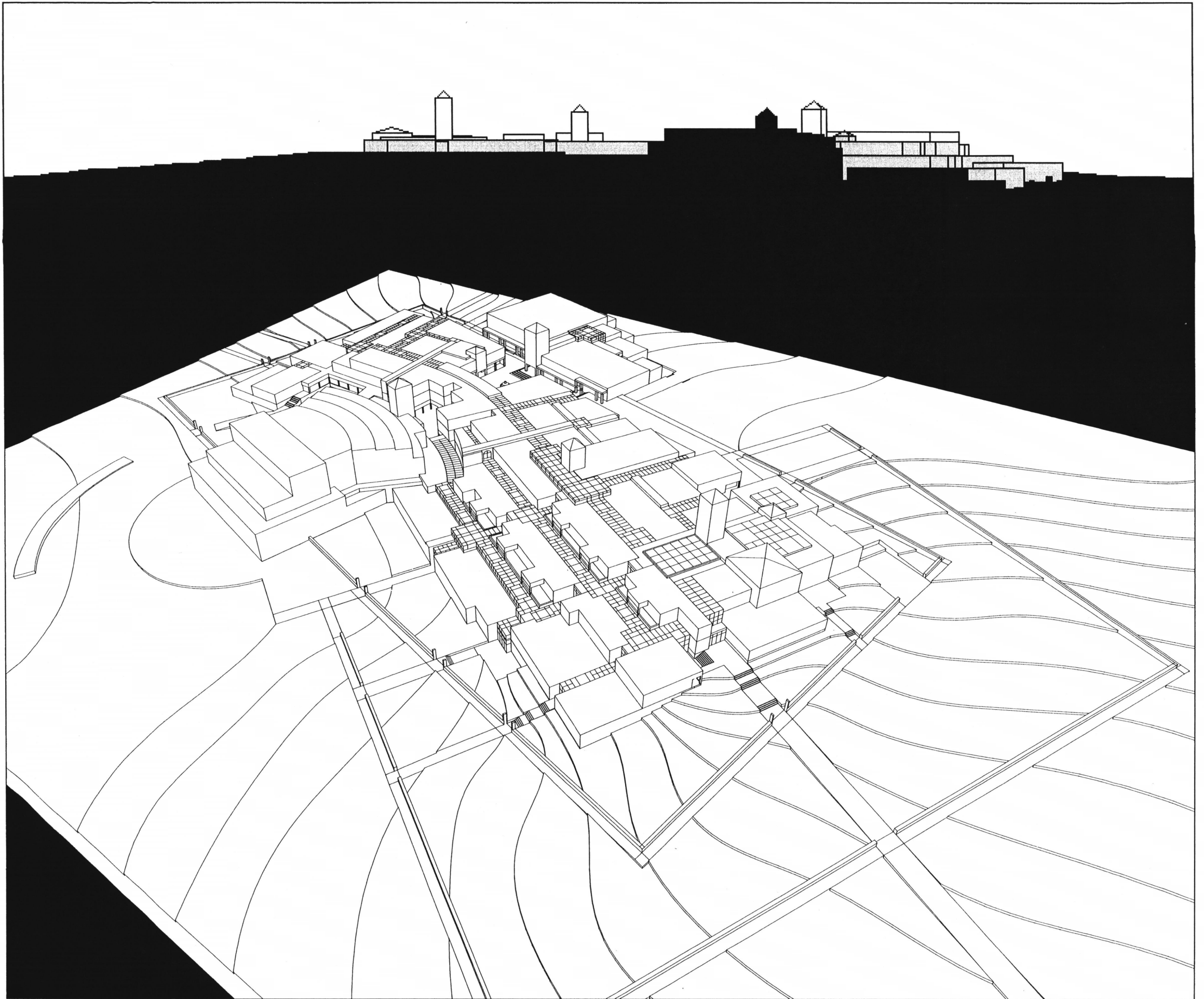
This connector street is curved, concealing one region from the other while visually drawing one to the other side. The two regions are comprised of different types of classrooms. The east side has English, math, history, foreign language, home economics and music classes. The west side has science, art and industrial arts classes.

Business and science classes are at the connection. The two regions also have opposing directions of circulation. In

the east region the vertical circulation, in the form of stairs and elevator accesses, travels north and south and the horizontal circulation travels east and west. In the west region the vertical circulation travels east and west, while the horizontal circulation travels north and south. With this change in direction, the light and shadows along the horizontal circulation streets is different in each region. To accentuate this difference, the pattern of skylighting also changes from one region to the other.

As in the medieval town, the high school has a definite perimeter wall. Its function is to separate the pedestrian high school from vehicular traffic in the form of a low wall. Entrances through this wall are marked by vertical columns. The wall is low to create a sense of enclosure, but not of imprisonment. This allows the students and teachers to locate buses and cars while exiting the school. In the east region there is an inner perimeter wall separating the pedestrian zone from the public transportation (bus) zone. An outer perimeter wall separates the public from the private transportation (cars). The west region only has one perimeter wall separating pedestrian and private transportation zones. In the south, a circular arc extends through the perimeter wall, signalling the beginning of the ramp leading to the theater and Theater Plaza.

- 1 Administration / Guidance Suite / Health Suite
- 2 Library
- 3 Cafeteria
- 4 Gymnasium
- 5 Theater
- 6 Gymnasium / Administration Plaza
- 7 Theater Plaza



- 1 Theater House
- 2 Theater Stage / Backstage
- 3 Theater Storage

- A English Classroom

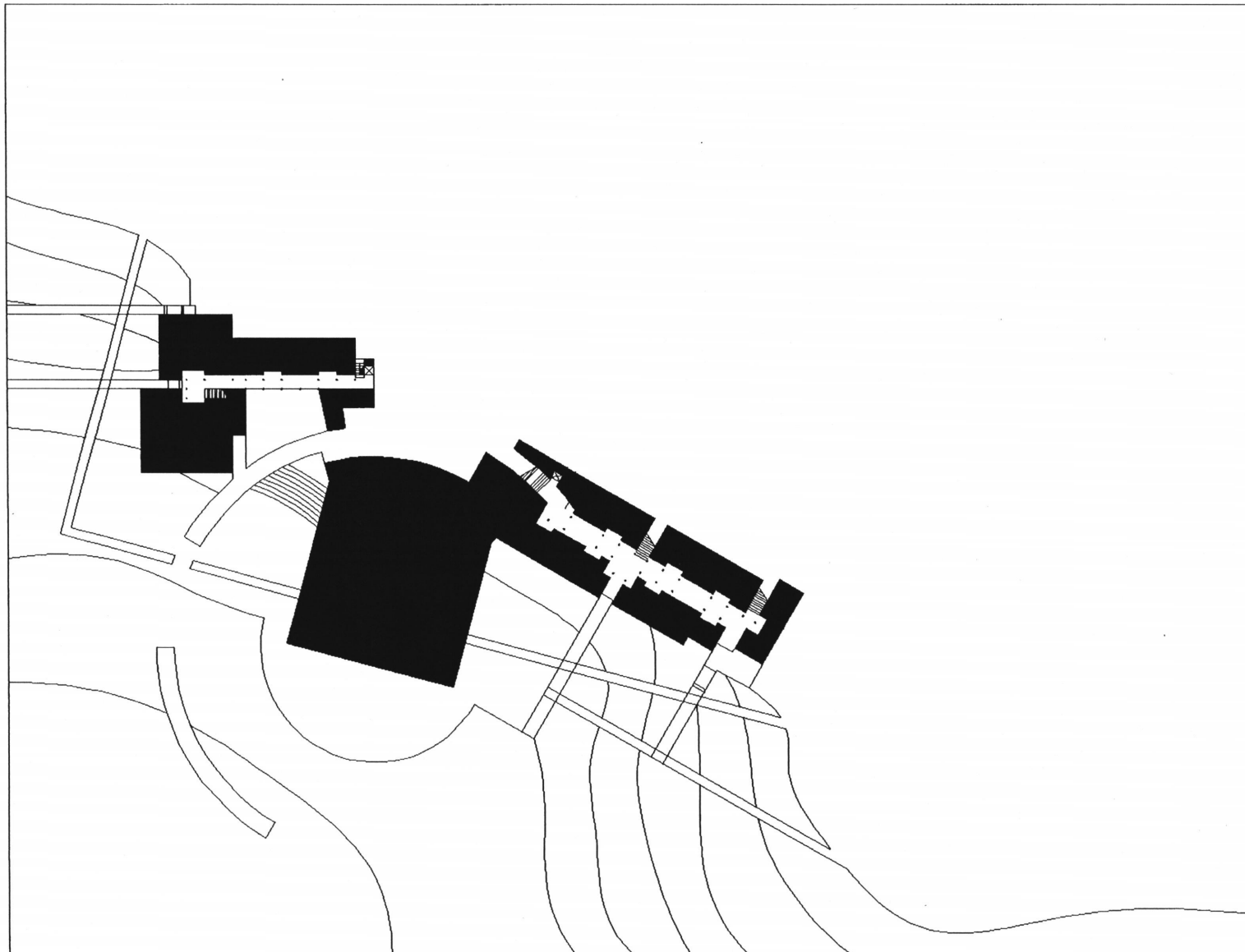
- G Industrial Arts Classroom
- H Music Instrumental Room
- I Music Choral Room
- J Music Small Ensemble Room

First Level

The first level consists of the theater, two narrow streets, a small industrial arts plaza, an outdoor arts plaza and a small music plaza. Both the two streets and three small plazas differ in character from each other. On the west side are the industrial arts classrooms; on the east side are the music and English classrooms.

Entering the west street from the west parking lot, the street opens immediately into a very small two story tall skylit plaza. A stair to the second level exits the plaza. The street continues past the plaza, becoming a 8' wide arcade looking onto the outdoor arts plaza. This plaza is for the creation and display of industrial arts and art projects.

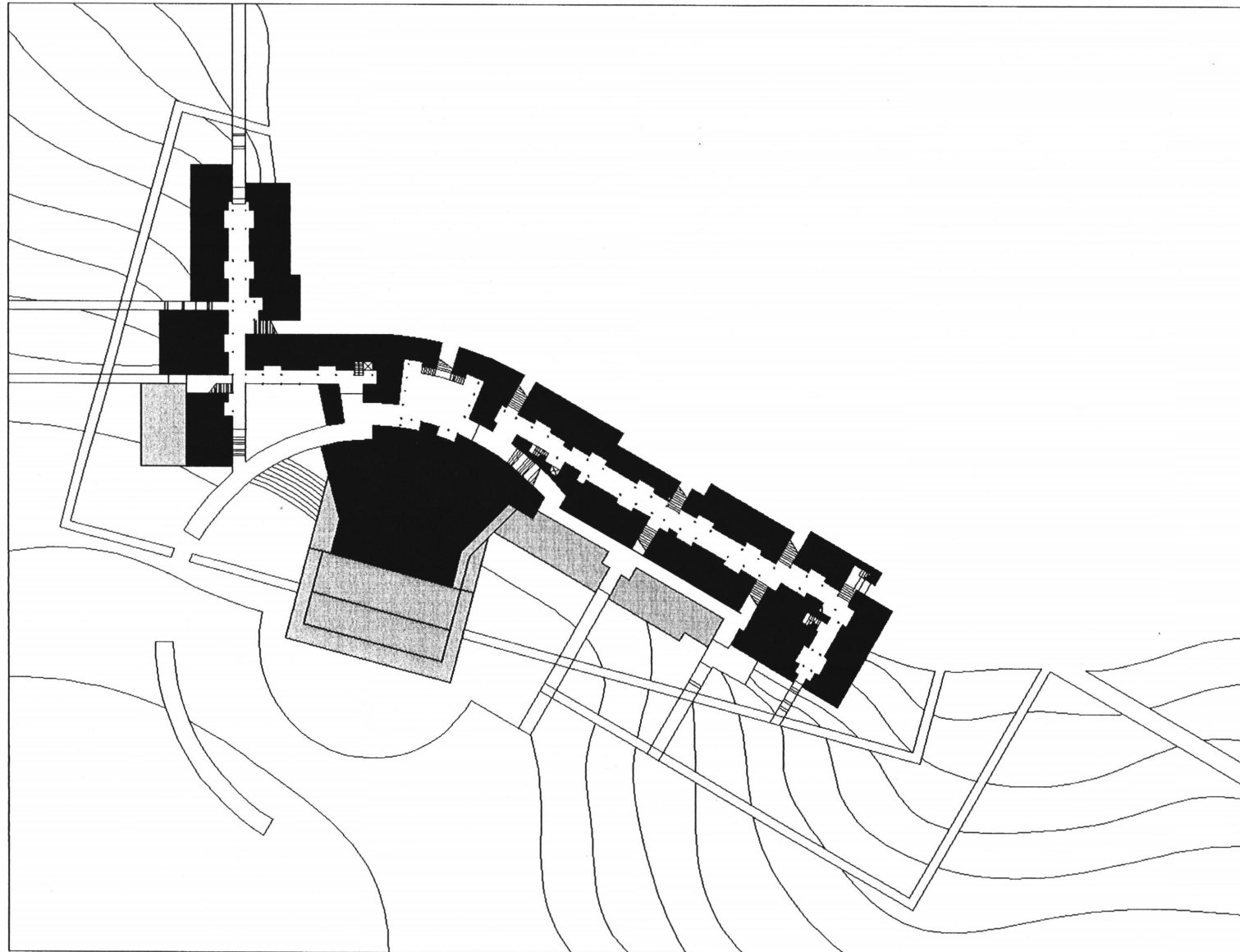
The east street's main entrance is from the second level Theater Plaza. From the Theater Plaza, the street descends down a curving stair to the first level. The street is 12' wide and is two stories in height on one side and 1.5 stories in height on the other. At the intersection of a side street is a small plaza for small music ensembles to practice before or after school hours. The music suite offices open onto this plaza. At the southeast exit of the plaza is a two foot elevation change. The music suite is adjacent to the theater and has direct access to the theater stage through a corridor running alongside the theater house. As the music rooms require 16' high ceilings for proper acoustics and require separation from regular classrooms for noise control, they are placed on the edge of the school with no classrooms above. On the other side of the street are English classrooms. The street's other entrances are from side streets which continue on to climb the hill.



- K Music Instrument Storage
- L Music Office Library, and Practice Rooms
- R Restroom

- 1 Theater Lobby
- 2 Theater House
- 3 Theater Ticket Office and Restrooms

- A English Classroom
- B Social Studies Classroom
- C Math Classroom
- D Science Classroom



- G Home Economics Laboratory
- H Home Economics Classroom
- J Art Classroom
- K Drafting Classroom

- L English Office
- M Science Greenhouse/Seminar
- N Home Economics Offices
- R Restroom

Second Level

The second level consists of the outdoor Theater Plaza and theater entrance, two streets connected by the outdoor plaza, and three small plazas. The main entrance to this level is the circular ramp leading up into the Theater Plaza. All other entrances are secondary entrances from the parking and bus zones and from intersecting stair streets.

On the west side are science, art and industrial arts classrooms. For proper lighting, the art classrooms require a 16' ceiling height and placement at the school's edge. Entering the street from the north, the street is 12' wide, two stories tall on the left and 1.5 stories tall on the right. At the intersection of a side street is a small plaza where activities can take place during and after school. An intersecting street exits the plaza, ascending to the third level. Past the plaza the street continues as a covered, 8' wide street. One may then either exit the school or turn the corner where the street becomes an arcade overlooking the arts plaza. The street ends at the Theater Plaza entrance.

On the east side are math, English, social studies and home economics classrooms. From the Theater Plaza, the second level street entrance is shared with the curved stair descending to the first level. Turning left onto the street, the street is 12' wide and two stories in height. Almost immediately there is an arched span crossing the street. This is the handicapped access street at both the third and fourth levels crossing the second level street to the elevator. The arch frames the view of the street beyond. At the end of the street there is a decision to be made. Either turn left and climb the stairs to the main entrance of the school, or turn right onto a narrow 8' wide street, one story in height. At this point of decision there is a small plaza that provides access to the third level arcade above.

- 1 Administration
- 2 Health Suite
- 3 Library
- 4 Cafeteria
- 5 Gymnasium
- 6 Gymnasium Dance Studio
- 7 Gymnasium Auxiliary Gym
- 8 Theater balcony

- A English Classroom
- B Social Studies Classroom
- C Math Classroom
- D Science Classroom



Third Level

The third level consists of the Gymnasium/Administration Plaza, the Library Plaza, the Cafeteria Plaza, and their respective "civic" buildings. There is one continuous street connecting these plazas and one other small plaza. The entire street is two stories in height. On this level are the two main entrances to the school - at each end of the Third Street. There are many side entrances ascending and descending to other levels.

The west side contains science classrooms and the health suite. There is a small plaza where a stair street ascends to the fourth level. The street then changes direction and travels east. An arched span crosses the street and frames the curve of the street beyond. This span is the fourth level access street crossing Third Street to the elevator. As the street curves southward, it becomes a two-story covered arcade looking onto the gymnasium plaza. At the center of this curve a street descends down to the Theater Plaza, connecting the two outdoor plazas.

Past the two plazas, the street continues southeast. On the this side are math, English and social studies classrooms. Once again an arched span crosses the street, this time framing a view of the Library Plaza. Underneath the arched span is the access street to the elevator and to the math and social studies offices. Inside the Library Plaza are special use rooms, such as the student government office, the bookstore, the journalism room and the yearbook room. The plaza thus becomes a major center of activity for the school. As the street exits the plaza there is an elevation change of two feet. The street continues to the Cafeteria Plaza with its raised floor. Past the plaza there is another arched span which provides access to a teachers lounge on the fourth level. The street then exits the school.



- E Business Education Classroom
- G Child Development Laboratory

- H Journalism Room
- J Bookstore
- K Student Government Office
- L Yearbook Room
- M Social Studies Offices
- N Math Offices
- O Teacher Dining Room
- P General Receiving Room
- R Restroom

- 1 Guidance Suite
- 2 Library
- 3 Cafeteria
- 4 Gymnasium Auxiliary Gym

- B Social Studies Classroom
- C Math Classroom
- E Business Education Classroom
- F Foreign Language Classroom

Fourth Level

The fourth level consists of small secondary and tertiary streets and one small plaza. The streets are either 8' wide and covered or 12' and skylit. The streets are connected to each other, passing through the library, twice crossing over Third Street and running alongside Third Street as an arcade. At many points the streets descend to the third level street and plazas or end at stair streets which then descend to the third level.

On the west side of the Gymnasium/Administration Plaza is the Guidance Suite, teachers' lounge and business education classrooms. On the east side of the plaza are the math, foreign language, and social studies classrooms, the computer complex, upper level of the library, television studio, teachers' lounge, ESOL suite, and the upper level of the cafeteria. The television studio requires a 16' ceiling height for equipment and acoustics and is required to be adjacent to the library.

The one small plaza is at the intersection of the handicapped access street and the fourth level street as it leaves the library. The foreign language offices open onto this plaza. As one enters the plaza from the library there is a 2' descending ramp into the plaza. This plaza becomes the center of the foreign languages department.



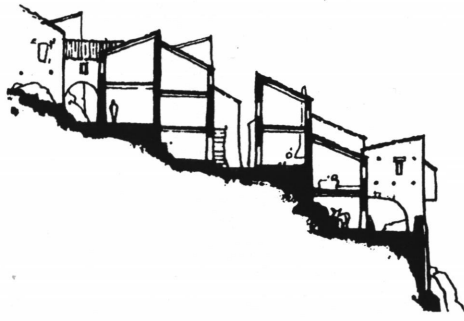
- G Computer Complex
- H Television Studio
- J ESOL Suite

- L Business Education Offices
- K Foreign Language Offices
- M Teachers' Lounge
- R Restroom

This is the central axis of the school. The axis extends from the theater tower through the Theater Plaza and the Gymnasium/Administration Plaza to end at the gymnasium tower. Third Street divides the two outdoor plazas. A street descends from the Third Street down stairs to overlook the Theater Plaza. The stair then splits and descends alongside the plaza walls to the plaza floor.

Both plazas possess specific elements that define the plaza. Both plazas have fountains, providing change and movement. The plaza walls have horizontal bands creating shadows. Arcades in both plazas also provide shadows as well as recessive bases. The gymnasium has a raised base, indicating its prominence in the plaza.



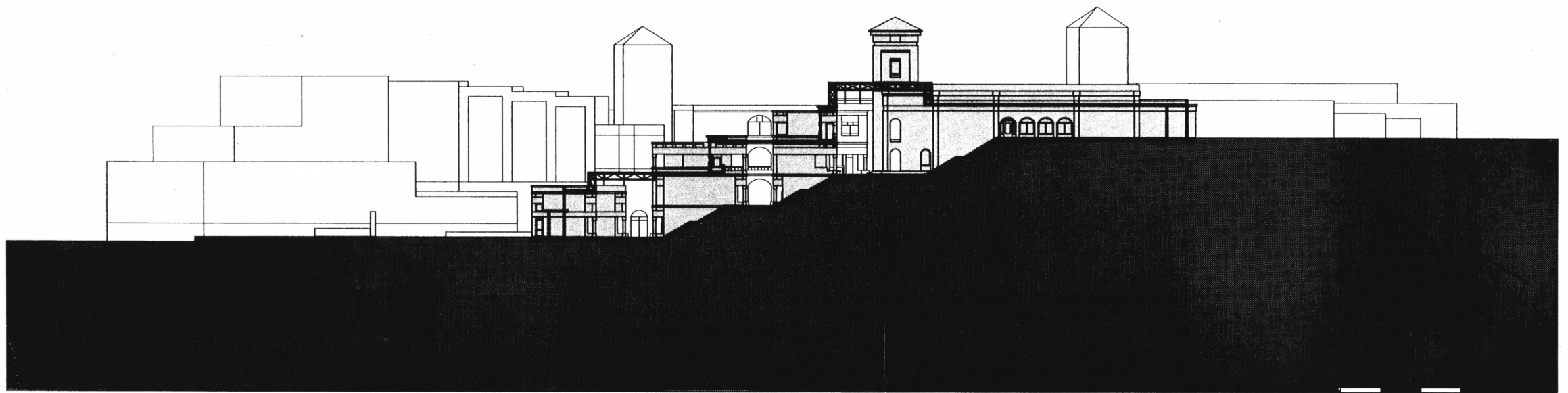


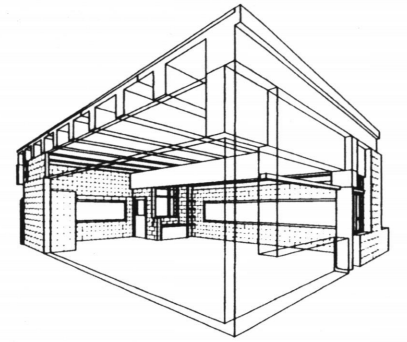
From the top of the hill, this street enters alongside the library and descends into the Library Plaza. The overhead skylight is raised at the plaza to provide more light and a sense of greater space.

The walls of the classrooms have horizontal bands at the floor levels, accentuating the descent of the street. Conversely, the library wall rises unbroken, giving emphasis to its prominence and mass.

Street arcades at both the street level and the level above the street provide a transition space between the street and classroom.

Arched crosswalks can be seen looking down the intersecting streets. These arches frame views as well as provide access to the elevator.



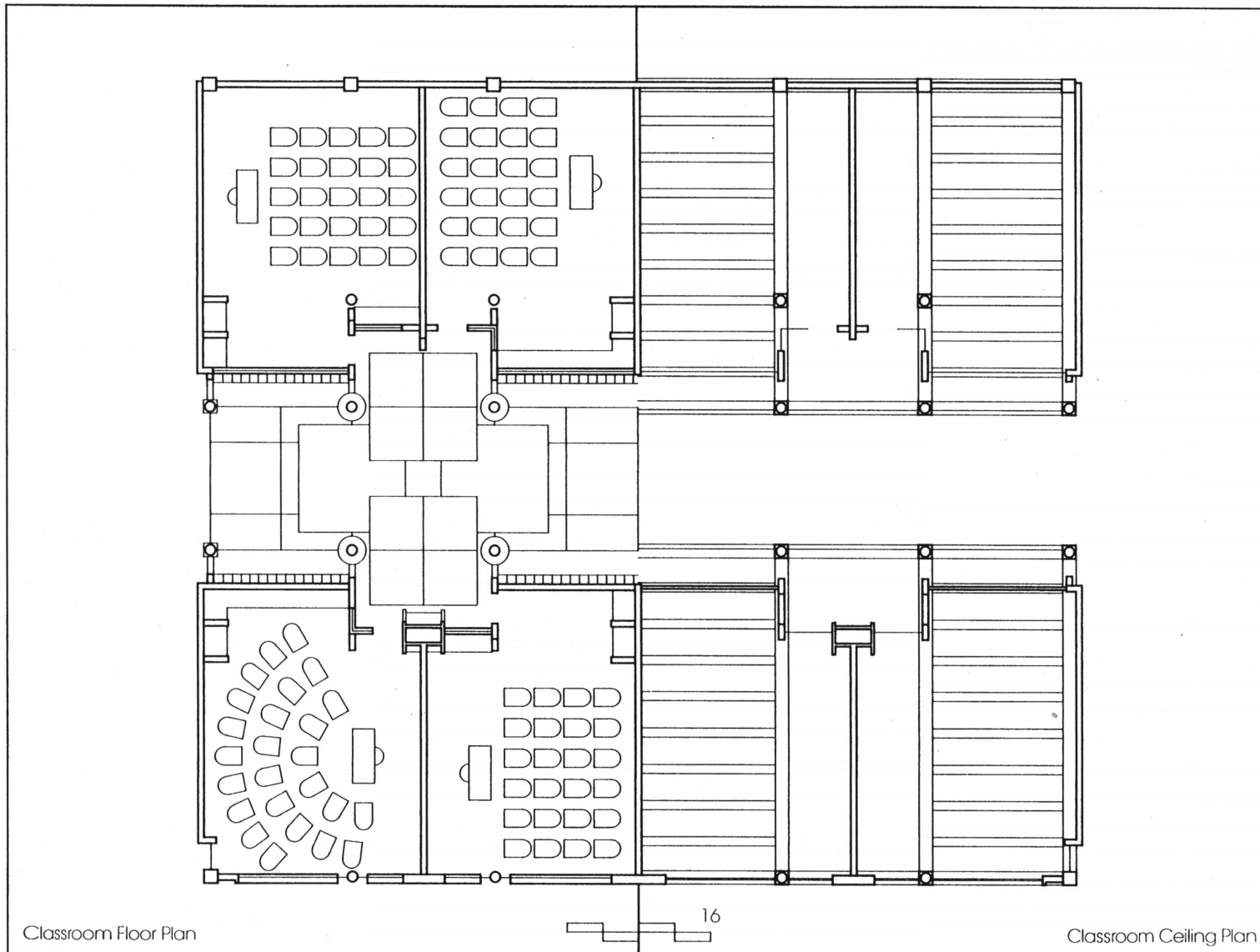
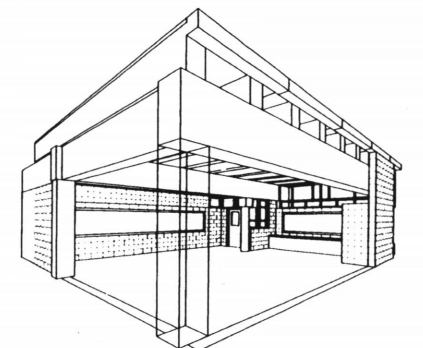


The Classroom, or the Wall of the Street

"In the city, the street must be supreme. It is the first institution of the city. The street is a room by agreement, a community room, the walls of which belong to the donors, dedicated to the city for common use. Its ceiling is the sky. From the street must have come the meeting place, also a place by agreement." Louis I. Kahn in Between Silence and Light, John Lobell.

The street and the classroom are designed concurrently. For the street's walls are the classrooms. A dialogue exists between the two where each defines the other. To give the street direction, each side of the street has different characteristics. The classrooms creating the street walls define these differences.

The transitional spaces between the street and the classroom are the arcade and the door, or entrance. The elements the street and the classroom have in common are the arcade, the window, the door and the column. Each defines the class and creates the wall of the street.

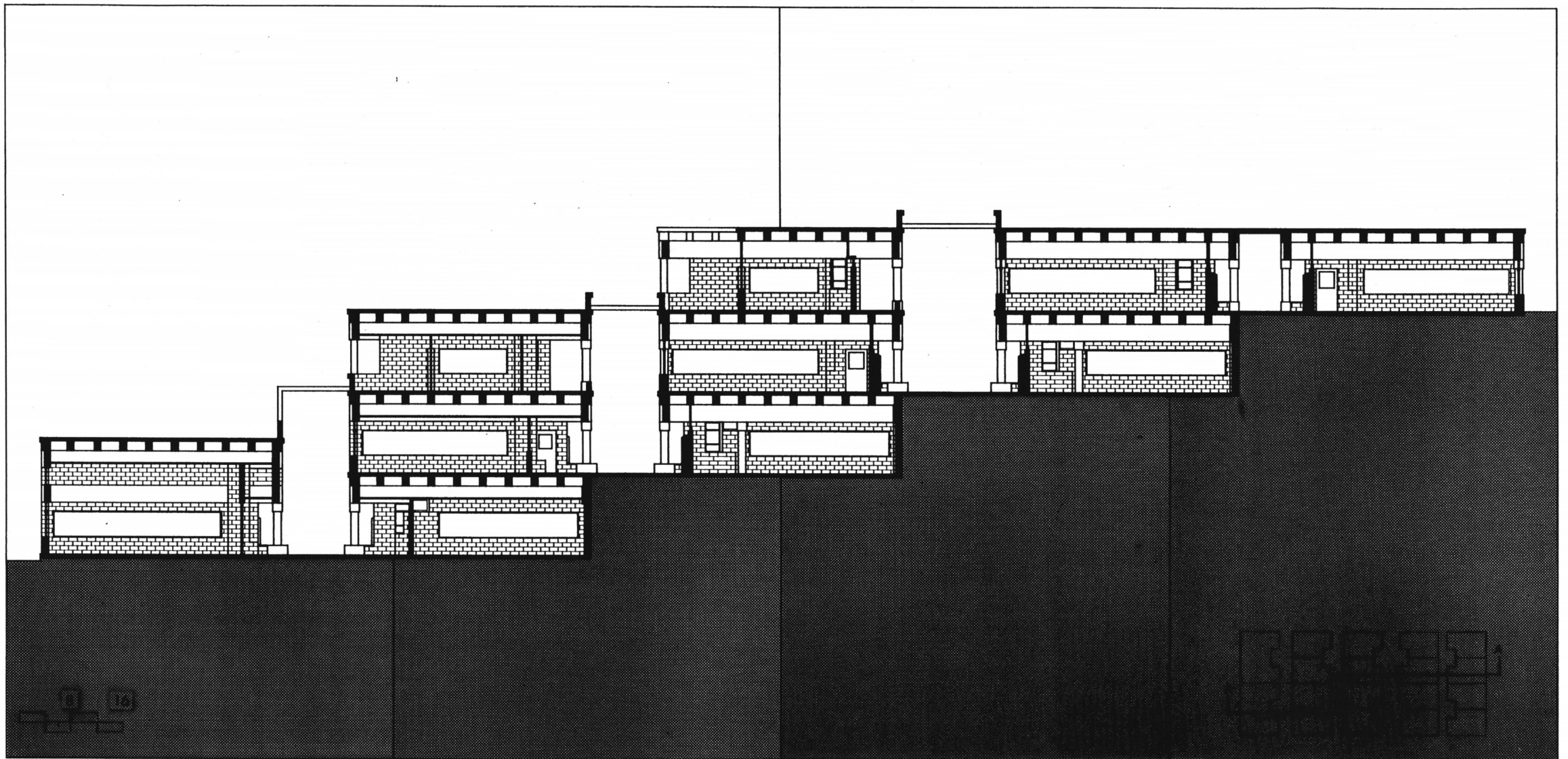


Classroom Floor Plan

Classroom Ceiling Plan

THE ARCADE

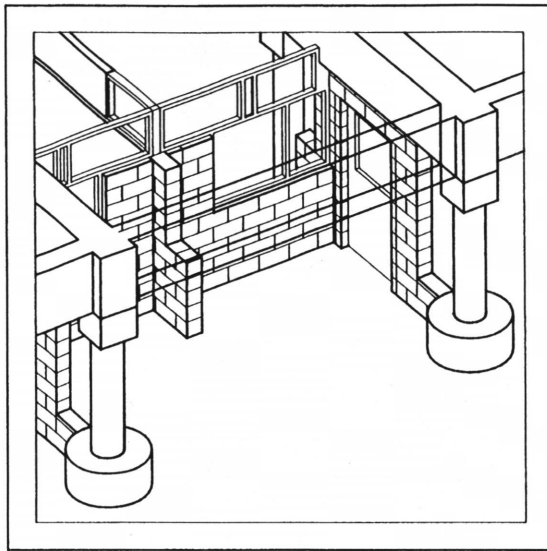
The arcade is not only a transitional space between the street and the class, but is itself a street in cross section. It has a specific use as well - to provide space for student lockers, moving them out of the circulation/traffic area and allowing students space to retrieve books and coats.



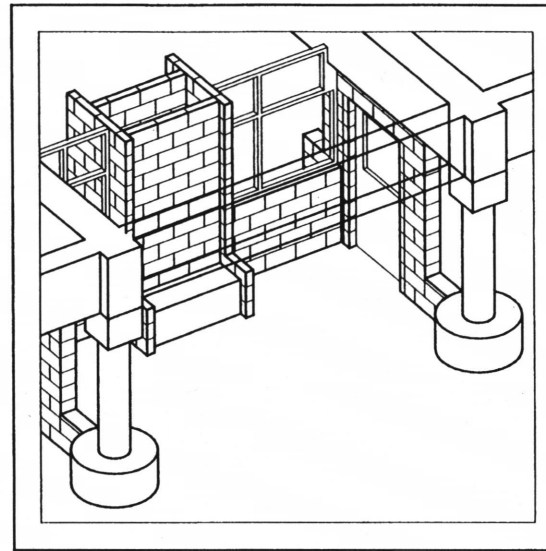
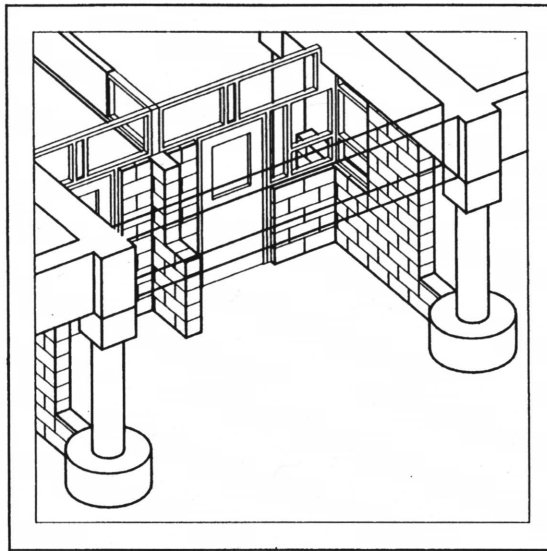
THE WINDOW

The window, in the east region of the school, faces south. This defines the east-west street and gives it a sense of direction. The street wall facing south has windows looking out to the street at both the street and second levels, whereas the street wall facing north does not.

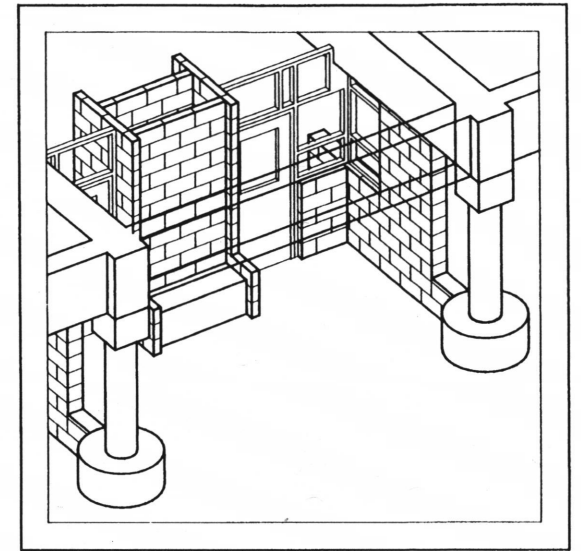
The classroom opening south into the street is inset into the hill. The only windows in the classroom are above the lockers, at street level. While these windows do not provide much light, they provide a sense of continuation of space out into the street. The classroom opening north into the street does not have any windows above the lockers, as it has windows overlooking the next street below. These windows in the arcade provide the street with direction, each side of the street having a different characteristic.



North Entrances

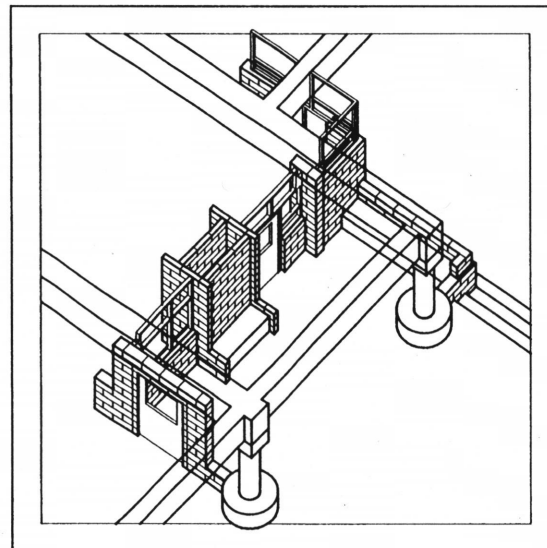


South Entrances

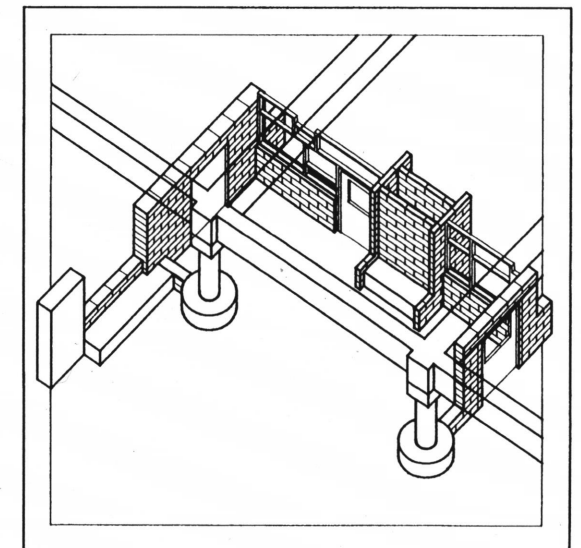
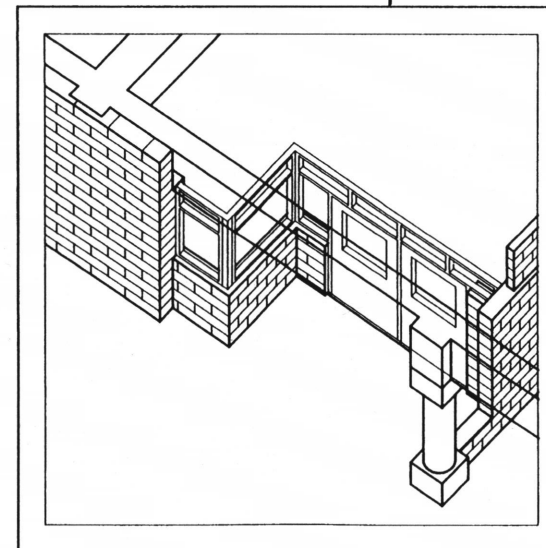
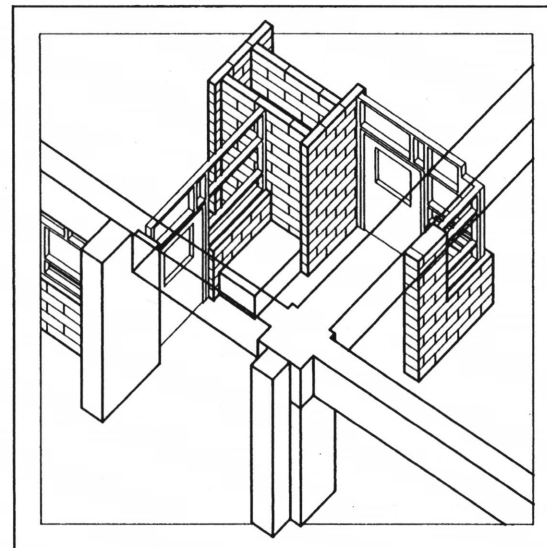


THE DOOR

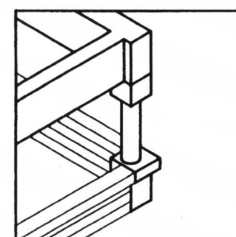
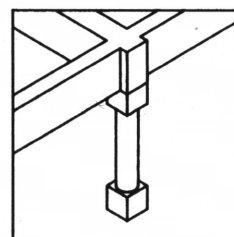
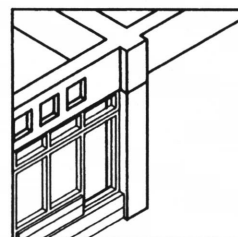
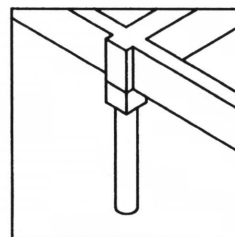
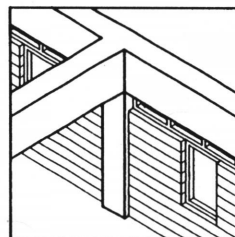
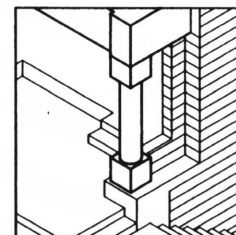
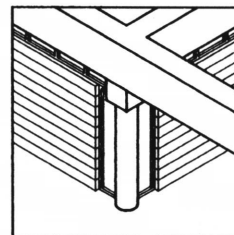
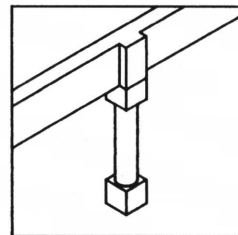
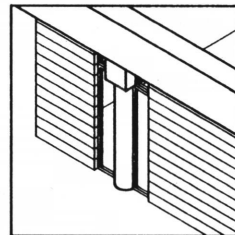
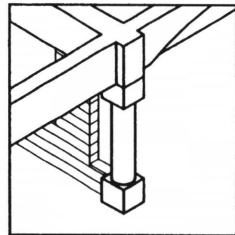
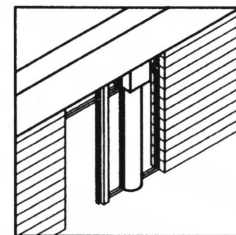
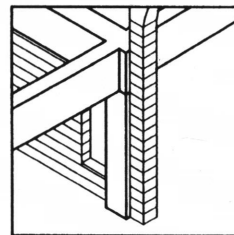
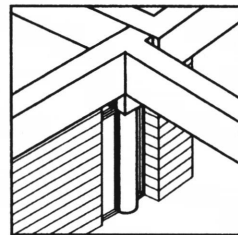
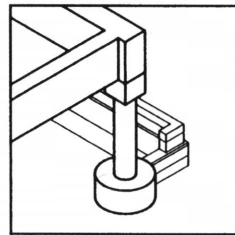
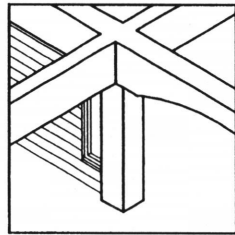
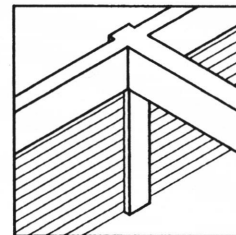
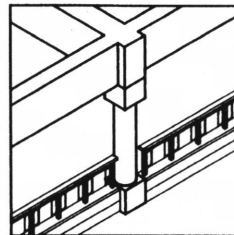
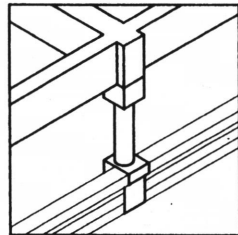
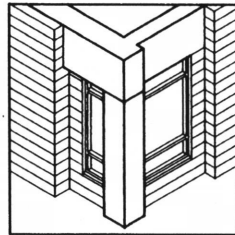
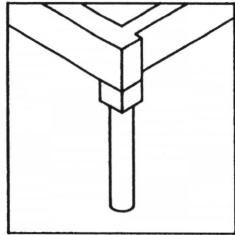
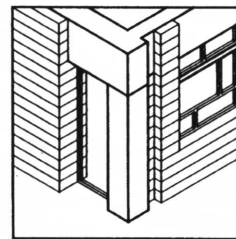
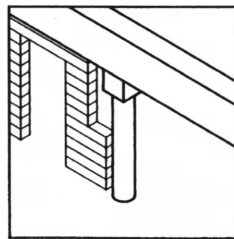
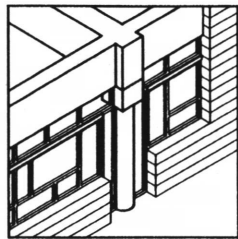
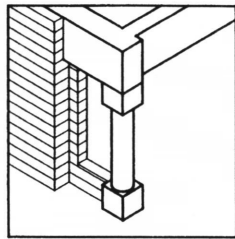
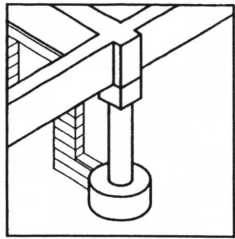
The door, or entrance, defines both the street and the classroom. Classroom entrances are inset and shadowed - similar to the medieval town's doors. It becomes a transitional space from the public street to the private classroom. It also becomes a small scale support space to small plazas at street intersections and to the large plazas. Four different types of entrances were created to provide variety and reduce repetition while retaining the same architectural language. The different entrances are also used to provide a sense of street direction. Classroom entrances opening south into the street are different than those opening north into the street. The classroom entrances opening north into the street contain seating whereas the those opening south into the street have a ledge to lean on. The door to the classroom can occupy two different positions, being either parallel or



Atypical Entrances



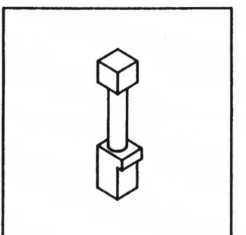
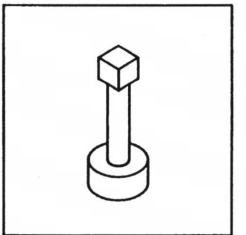
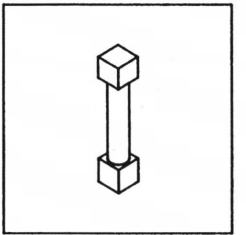
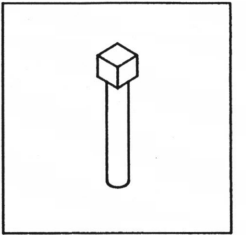
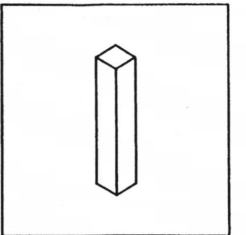
perpendicular to the street wall. Inside the classrooms, the classrooms opening southward have an extra column at the entrance to provide differentiation as well as to reduce the beam span. All classroom entrances have a dropped ceiling to provide mechanical space and to accentuate the height change between the street and the classroom.

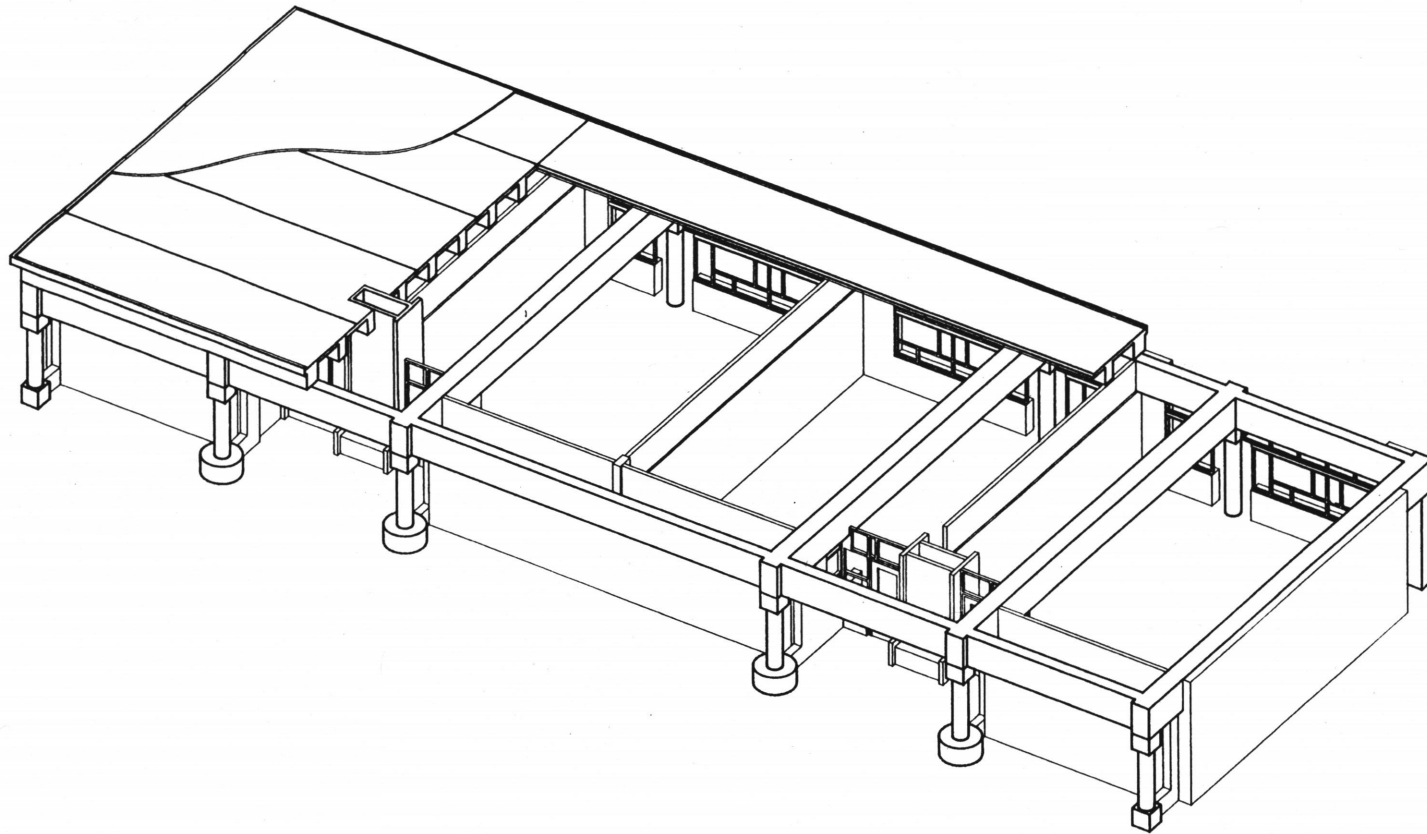


THE COLUMN

The column signals an entrance - to the school in the form of a street light, to a civic building in the form of a tower, or to a classroom or intersecting street in the form of a column. The column for the classroom and street has a different form for each situation. A square base indicates the entrance of an intersecting street; a circular base indicates the entrance to a pair of classrooms. The freestanding column inside the classrooms on the north side of the street has no base.

The classroom entrance column is a 14" circular column with a 26" base, providing 12" for seating as students gather before a class to exchange information or talk. All circular columns are 14" in diameter. Classroom columns embedded in walls are 16" square columns.

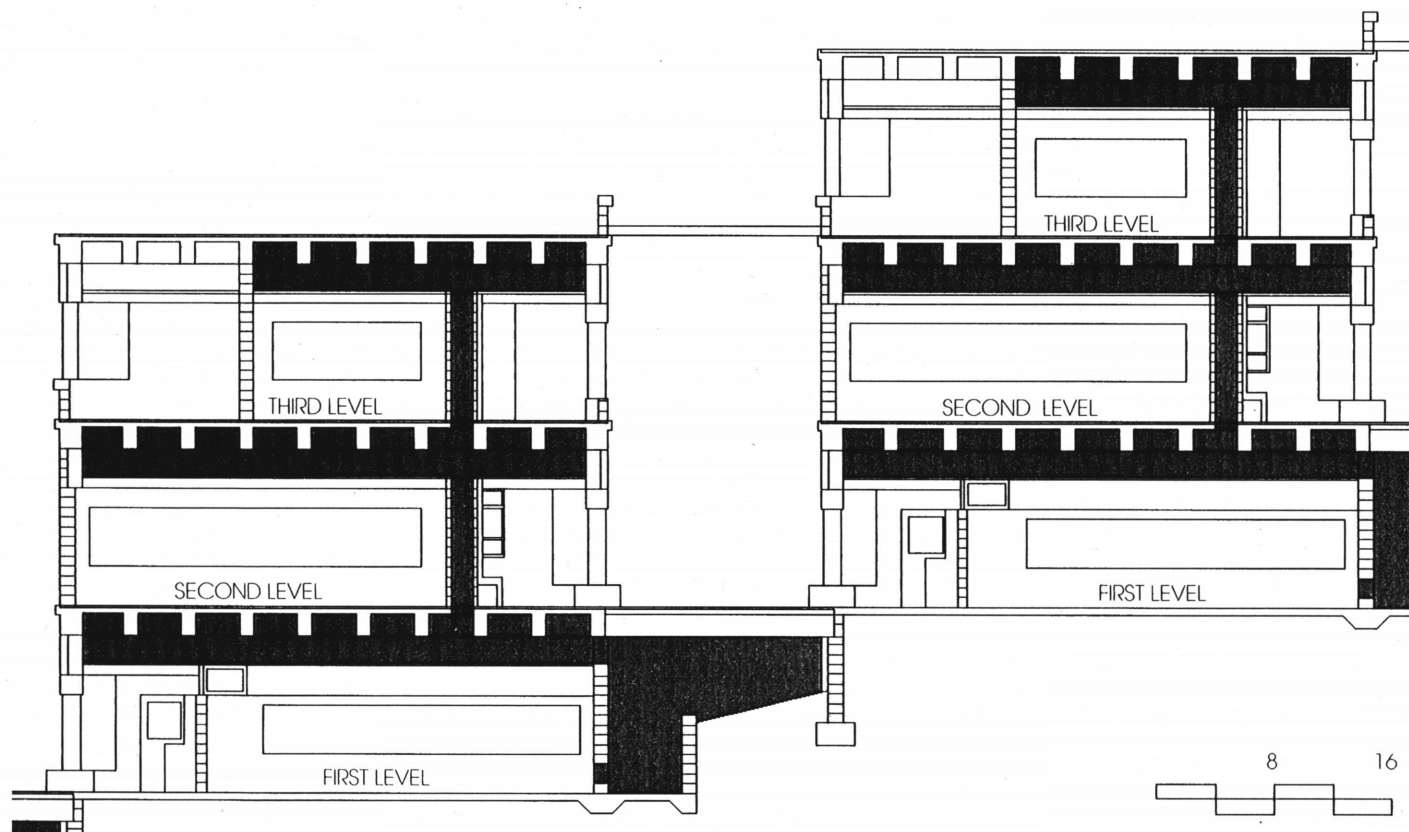




STRUCTURE

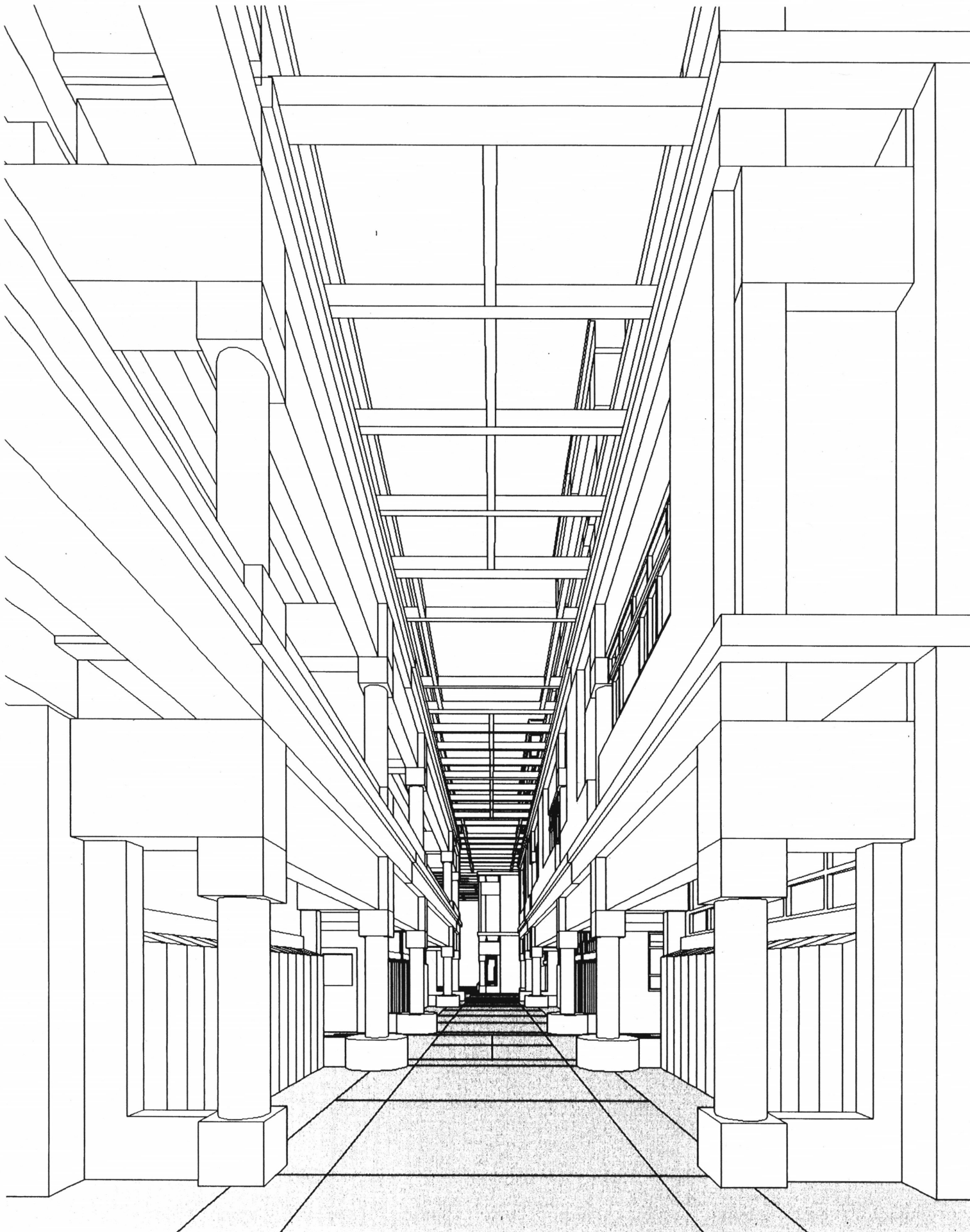
The walls of the street and classroom are concrete masonry with exposed concrete structure - beams, columns and second-level window lintels (structural beams). The floor structure consists of prefabricated double T-beams resting on poured-in-place beams and columns. A 2" concrete slab is poured on top, locking the prefabricated T-beams together.

Classrooms are grouped in pairs, sharing an entrance. The pair is then divided into three 16' bays. The floor structure is offset, grouping two classrooms from different pairs. The prefab T-beams span two 16' bays and cantilever 8' over the entrances to meet the next prefab T-beam. The horizontal bands of the prefab T-beams give the street direction and create shadows much like the horizontal bands of medieval towns. Inside the classroom the 30" deep concrete beam and the prefab T-beams are exposed in the student seating area. In the 16' entrance bay the T-beams are hidden by a dropped ceiling.



MECHANICAL SYSTEM

Placement of the mechanical system is the one of the two major differences between the four entrances. It also defines different use areas in the classroom. In order to provide mechanical access to second and third level classes and offices, a vertical shaft is located at the classroom entrances opening north into the street. The seat provided at these north facing entrances is the extension of shaft walls. The mechanical system runs underneath the street floor and then extends into first level classrooms where the ceiling is dropped, and up the vertical shaft into the second level class and third level office space. The dropped ceiling at the 16' entrance bay provides space for the mechanical systems and for special lighting over the teacher's desk, blackboard area or lab areas. Ventilation and lighting systems extend from the dropped ceiling space over the concrete beam into the student seating area, running exposed in the prefab T-beam recesses.



The Street

Street walls are defined by the classrooms-by their arcades, inset entrances, exposed concrete window lintels, horizontal bands from the prefabricated floor, and signage of classroom numbers, or addresses.

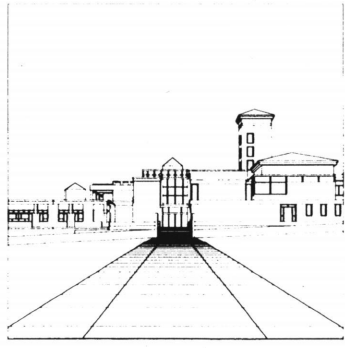
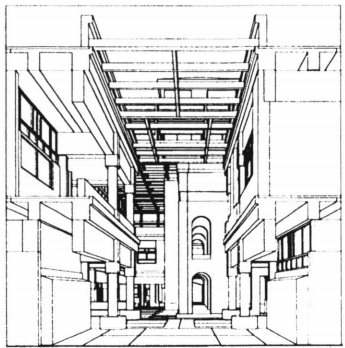
Street circulation is divided into two types - level streets providing horizontal circulation and stair streets providing vertical circulation. Two street tunnels provide handicapped access to all levels and arch over the level streets to cross them. These arches interrupt the street and frame views.

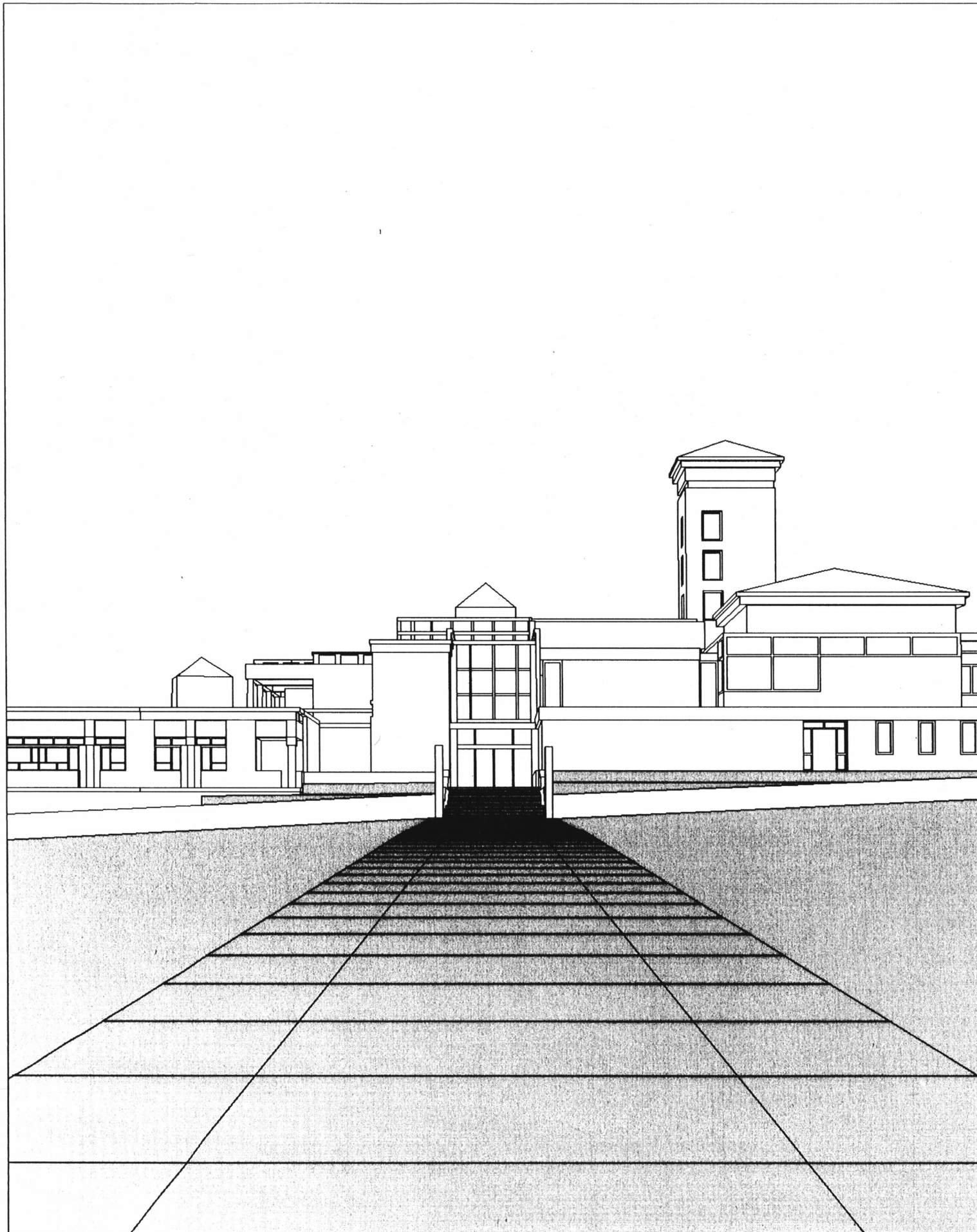
Street hierarchy is created by the amount of traffic and use and is reflected through street width. The primary or main street is two stories in height and 16' wide from column center to column center, or a real distance of 13'-10". Secondary streets are those streets two stories in height and 12' wide from column center to column center. Tertiary streets, one story in height with little traffic, are 8' from column center to column center and do not always have skylights as their "ceilings." The various street widths affect the amount of light entering each street, making the more well travelled streets brighter as well as wider than the less travelled.

The street view to the left is of a secondary street. The street is 12' wide. Similar to medieval streets, this street does not provide a continuous view down the street, inviting one to continue down the street. The horizontal prefab floor bands provide the street with a strong sense of direction.



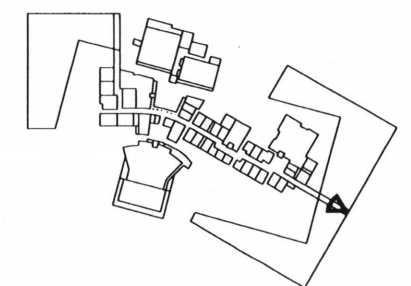
Sienna street





Florence street

Third Street begins at the school's outermost perimeter wall. As it passes through the next two perimeter walls, its passage is marked by vertical columns. Beyond the street entrance into the school, the Cafeteria Tower, the raised skylight of the Cafeteria Plaza, and the Library Tower can be seen. The anticipation of the street ending in a plaza creates movement and direction.



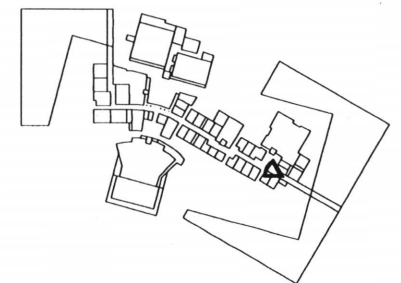
THIRD STREET



San Gimignano street

The arches signal the entrance to the Cafeteria Plaza and create anticipation of that event. Past the arches, steps provide a visual guide to the plaza. Texture is provided by the various materials - the dark brick of the cafeteria, the block and concrete of the classrooms, and by the floor pattern.

The view down Third Street is not continuous, but is partially blocked by the offset of the classrooms. This view of Third street terminates at the Library.

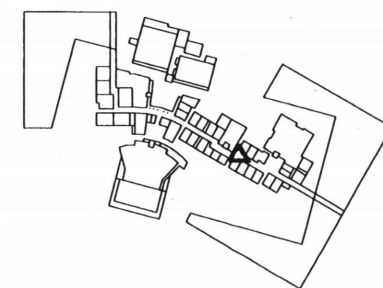


THIRD STREET



Sienna street

The different characteristics of each side of the street give the street direction. As the street ends at the Library Plaza, a two foot elevation change marks its entrance. The plaza's openness and brightness provide a contrast to the street. From the street, the mass of the library obstructs the view of the plaza, drawing one into the plaza. Exits from the plaza can not be seen until the plaza is entered.

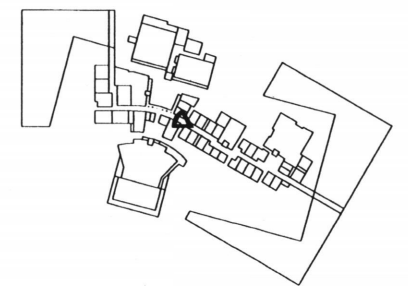


THIRD STREET



Assisi street

The curved facade invites one to continue down the street. The arches frame the view of the street curve and heighten the anticipation of events at the curve's end. Horizontal bands provide direction and strengthen the impact of the curve.



THIRD STREET

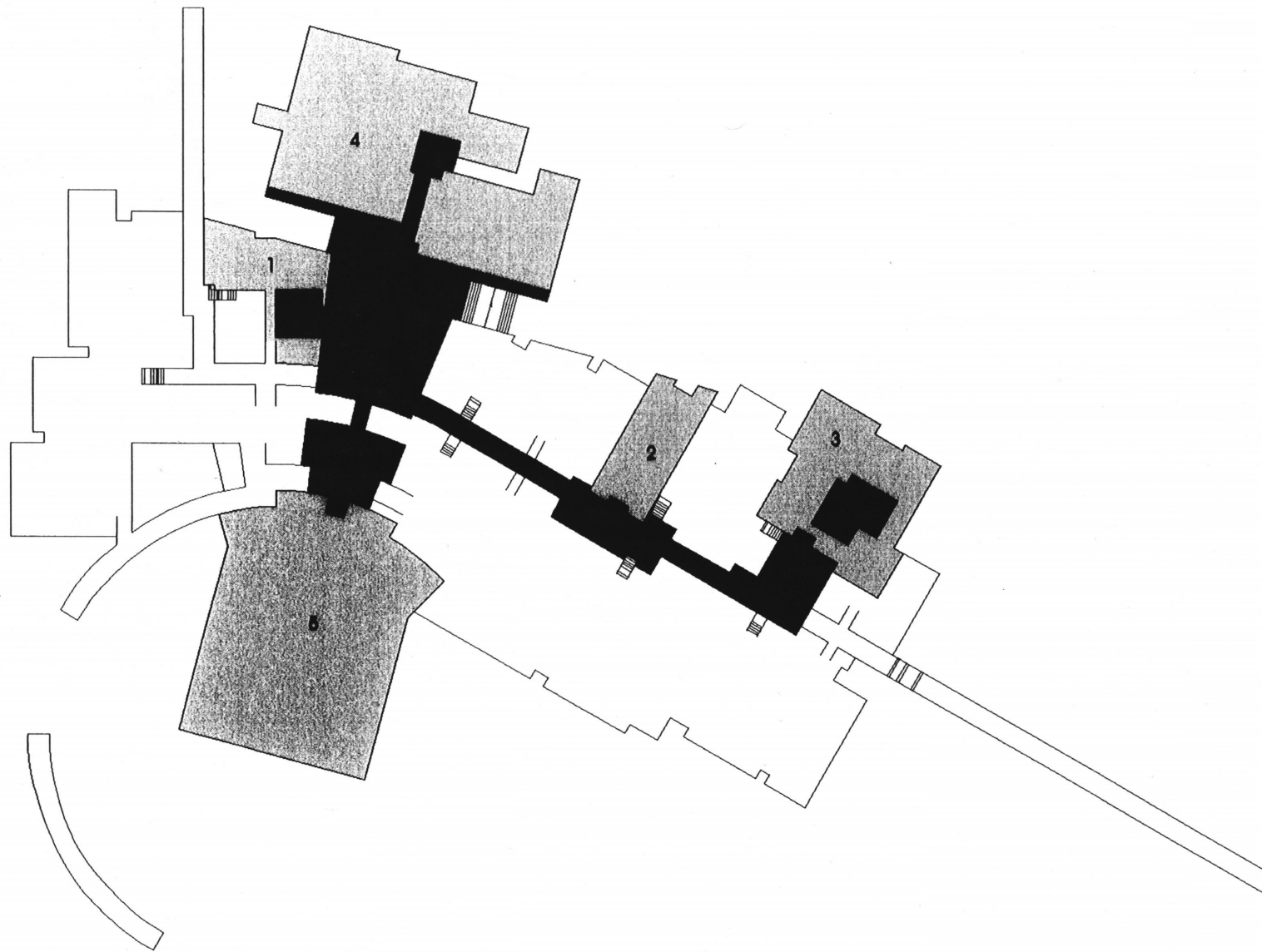
The Plaza

Plazas house the main civic functions of the school - the administration, the library, the cafeteria, the gymnasium, and the theater. They are the centers of school life. Plazas and the civic buildings located in plazas have their own levels respective to the school and its streets. One has to climb stairs or ramps to enter or exit a plaza. The civic buildings are elevated above the plaza on bases. The height change provides a visual guide, a focus. In the form of steps or bases it also provides seating, making the plaza a place to stop and inhabit, not just pass through.

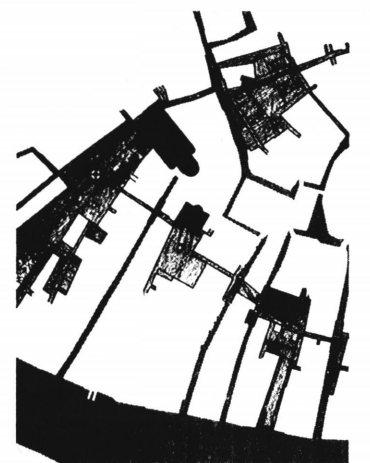
All plazas have an axis, or axes. The axis is created by focal points, such as civic buildings or fountains. The four plazas have different types of axuality. The gym / administration plaza has a dominant axis and a minor axis intersecting at the fountain; the library plaza has a centralized axis; the theater plaza has a focal or termination axis; and the cafeteria plaza has an offset focal axis.

Towers are placed to mark the plaza - to be a vertical marker or focus point. The tower also functions as a column, at its largest scale, marking an entrance. Street columns mark classroom and street entrances, columns at the school's perimeter mark entrances to the school, and the towers mark entrances to civic buildings.

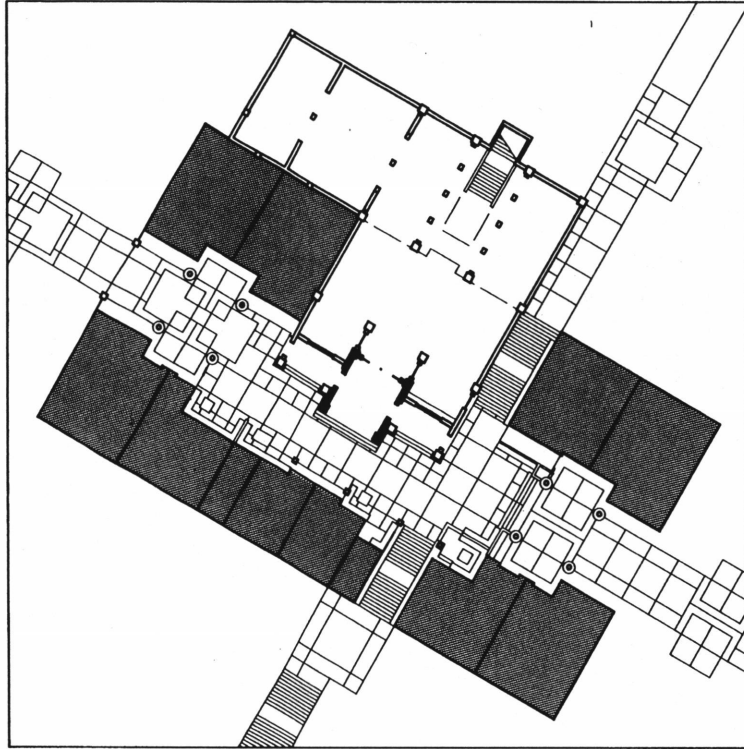
The civic buildings are built of a different material than the classrooms. Where the classrooms are built of concrete and light brown concrete masonry, the civic buildings are of a darker brown brick. This creates changes of color,



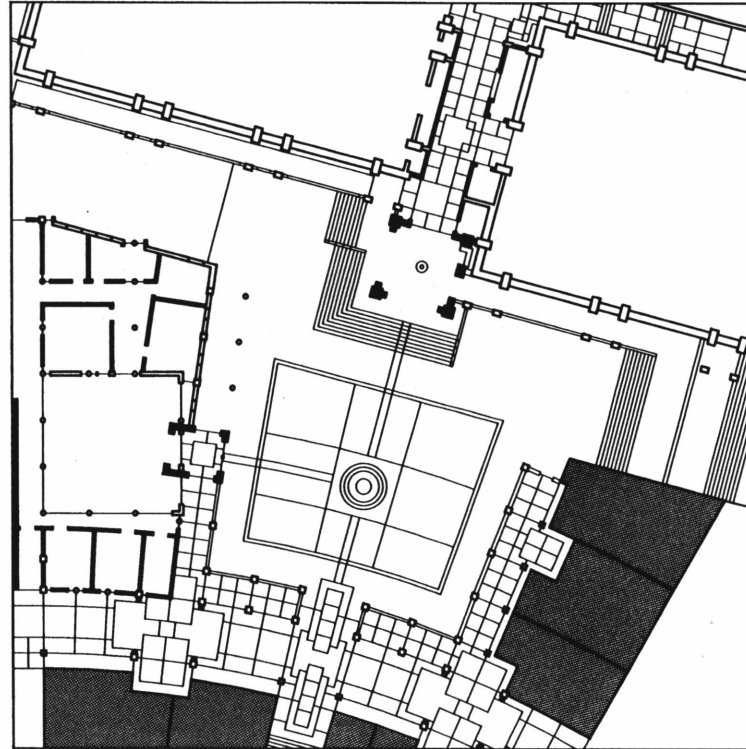
1. Administration / Guidance Suite / Health Suite 2. Library 3. Cafeteria 4. Gymnasium 5. Theater



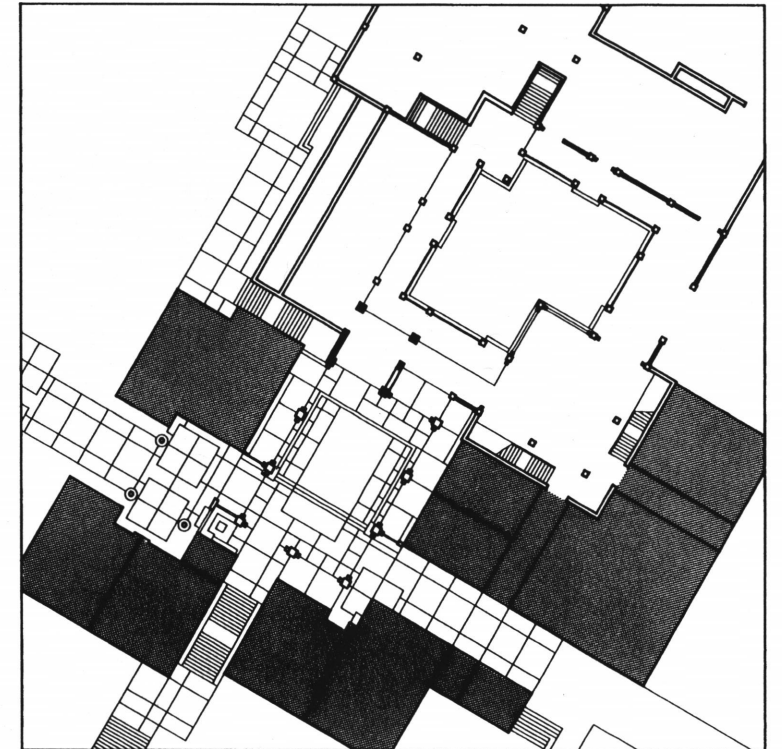
Venice plaza diagram
Edmund Bacon, *Design of Cities*



Library Plaza



Gymnasium / Administration Plaza



Cafeteria Plaza

of pattern, and of texture as well as a change of material.

Arcades are used in each plaza to create recessive bases and shadows. They are a transitional space between the lit plaza and the darker interiors of the buildings. Light and shade are important aspects of each plaza. Shadows are created by arcades, wall patterns, and towers. Shadows from buildings and towers will move across the plaza throughout the day. In the skylighted plazas, the skylights are raised above their street counterparts to create the impression of a larger space and more light and to be an exterior signal of a plaza. Movement will take the form of shadows, people crossing and sitting in the plaza, fountains, tables, and birds.

Arches are used in civic buildings, in arcades crossing streets, and as a symbol of entrance to a public place or street. Thus the arch becomes a symbol of public usage.

Each plaza is unique. Each has a different type of axiality, is different in size, in number of focal points and in building height respective to the plaza floor.

LIBRARY

- A Circulation desk
- B Exhibition Area
- C Reading Room
- D Stacks
- E Office
- F Conference Room
- G Workroom
- H On-line Information Retrieval Storage

- 1 English Classroom
- 2 Social Studies Classroom
- 3 Math Classroom
- 4 Foreign Language Classroom
- 5 Journalism Room
- 6 Bookstore
- 7 Student Government Office
- 8 Yearbook Room
- 9 Computer Complex
- 10 ESOL Suite

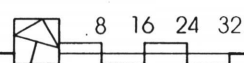


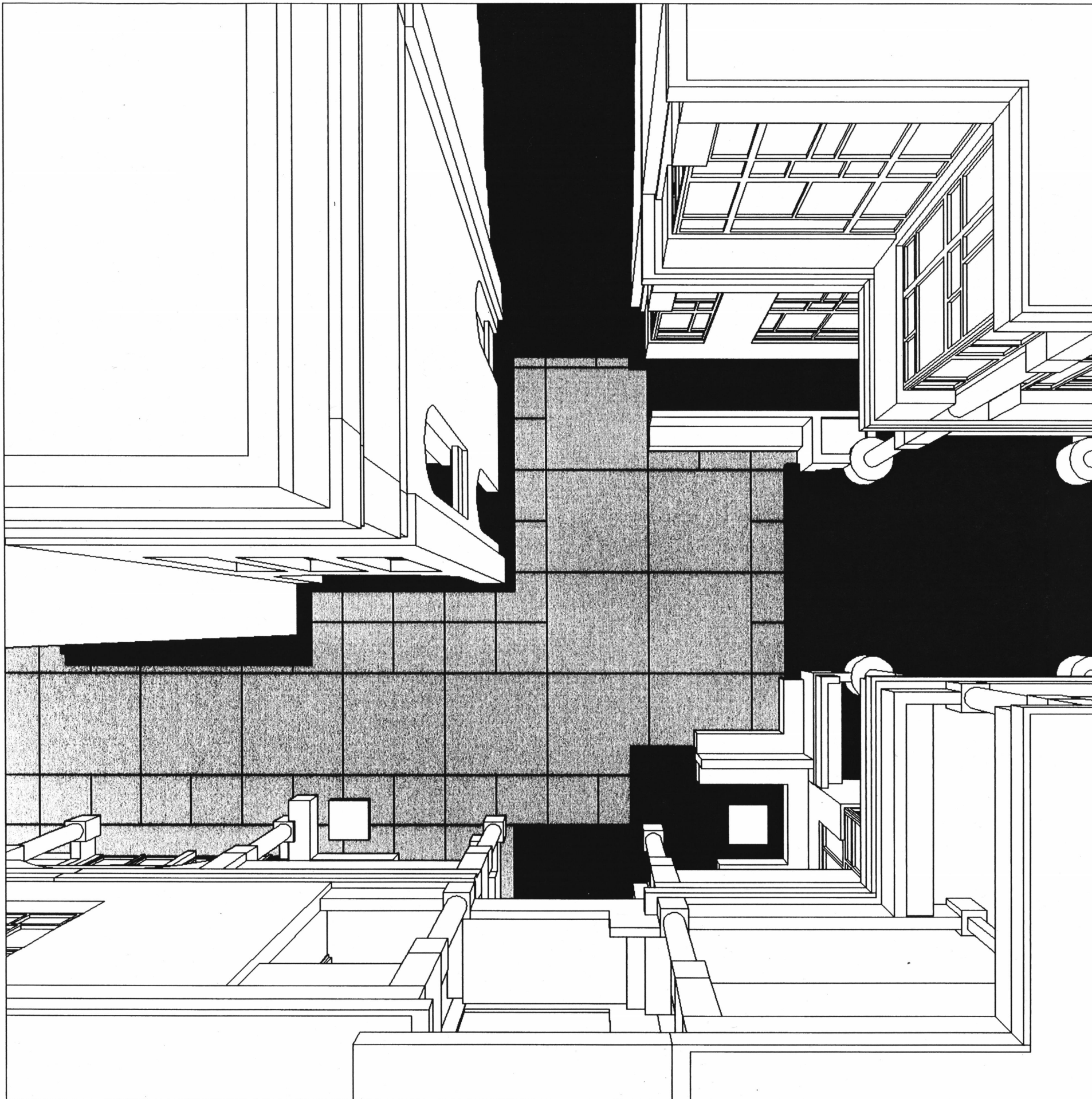
LIBRARY PLAZA

The library pushes from the edge of the school into the Library Plaza, becoming two stories in height and interrupting the fourth level street. Inside the plaza, the library is the focus, sitting on a 16" base. The plaza's axis is created by the library axis which culminates in the tower. The plaza continues the axis across the plaza to the arched entrance of the bookstore and Student Government office.

Movement inside the plaza is created by the use of the library and other rooms, and by the many seats and tables provided. The other rooms opening into the plaza are special use rooms - the journalism room, bookstore, SGA office, and yearbook room. The continual use of these rooms for information gathering and purchasing of supplies as well as the use of the library makes the Library Plaza a very active, urban place. Many seats and tables are provided in the plaza, so these activities inside the special use rooms can spill out into the plaza. After school, student activities can use the plaza for meetings and work.

Inside the library, one progresses along the axis, entering through the tower into the two-story reading room. Past the reading room the stairs continue the axis, rising to the second level. On the lower level, adjacent to the stairs are the circulation desk, office, workroom and storage space on the left, and the book shelves on the right. On the upper level, on either side of the stairs are the information retrieval room and the conference room. The stairs end in a small reading room with book shelves at its perimeter. The rear entrance of the library marks the end of the axis.



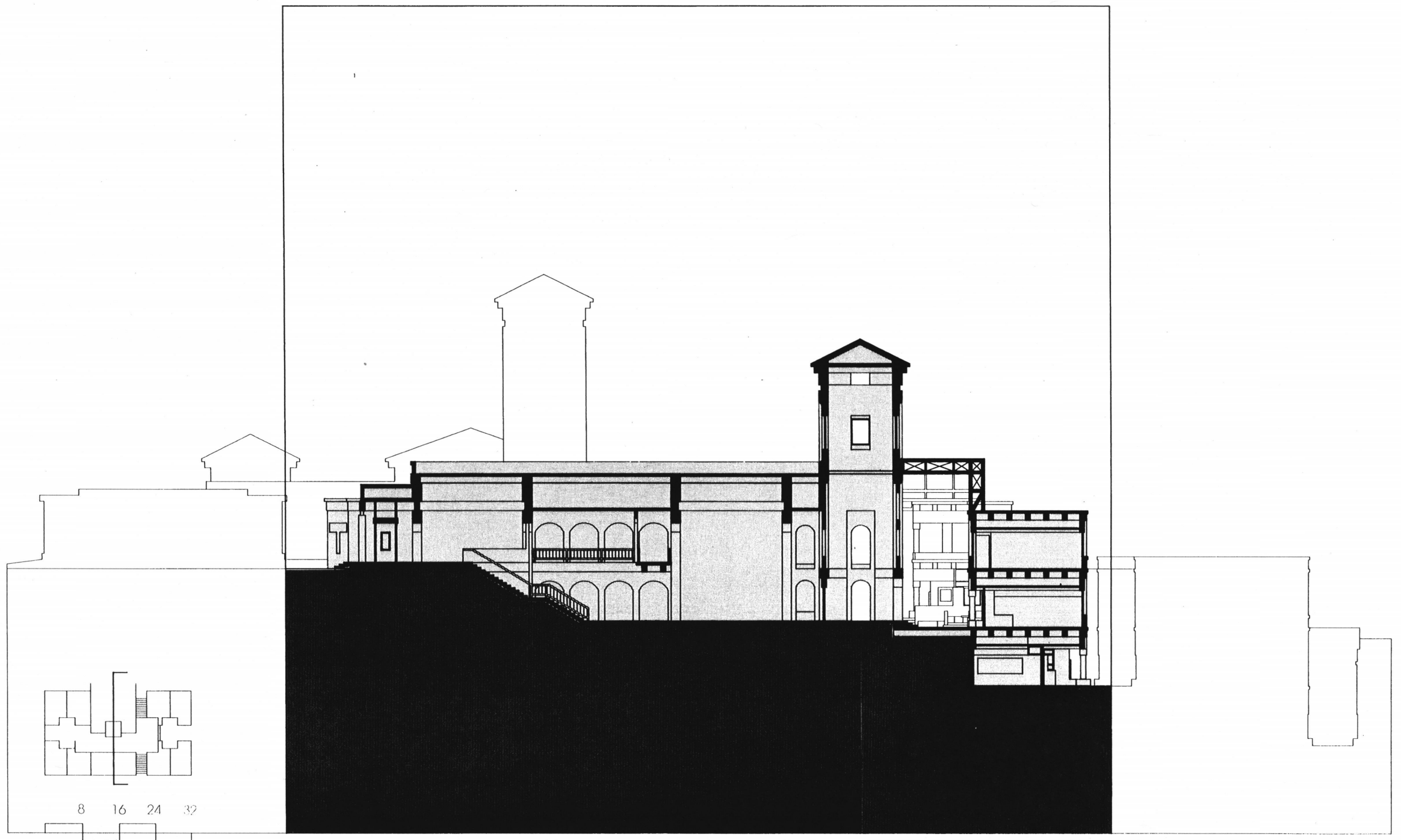


An interplay of light and shade during the course of the day is created by the arcades which become recessive bases, the horizontal bands in the walls, the skylighting mullions and the walls of the plaza.

The darker brick of the library sets it apart. The various materials - the darker brick of the library, the concrete and concrete block of the classrooms, their patterns and texture, as well as the floor pattern give the plaza texture.



At the library tower, the Library Plaza is at its narrowest - 16' wide. The library tower intrudes into the plaza 4' beyond the library arcade, forcing one to walk around the tower. The mass of the library, with its unbroken facade of darker brick is in direct contrast to the concrete and concrete block of the classrooms with their many articulations.



From the plaza, one enters the library through the tower. Besides signalling the entrance to the library, the tower acts as a ventilation shaft. Upon entering the library, a large arch frames the view of the reading room. The two-story tall reading room functions as a support space to the plaza outside. The plaza axis is extended past the tower by the library symmetry, the series of arches along the axis and the stairs ascending to the upper level.

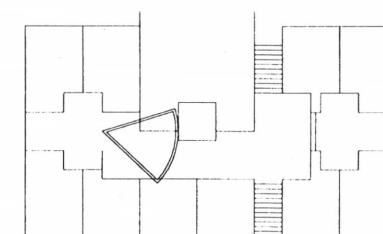


Street entrance to Piazza della Signoria, Florence

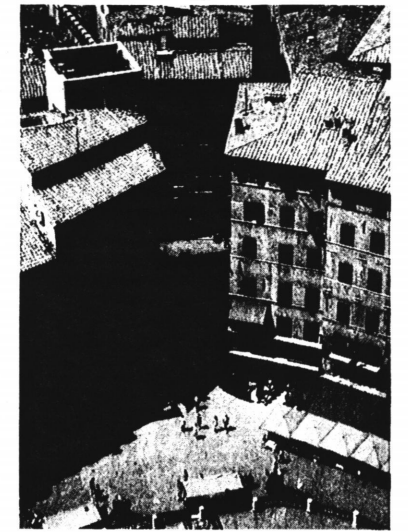
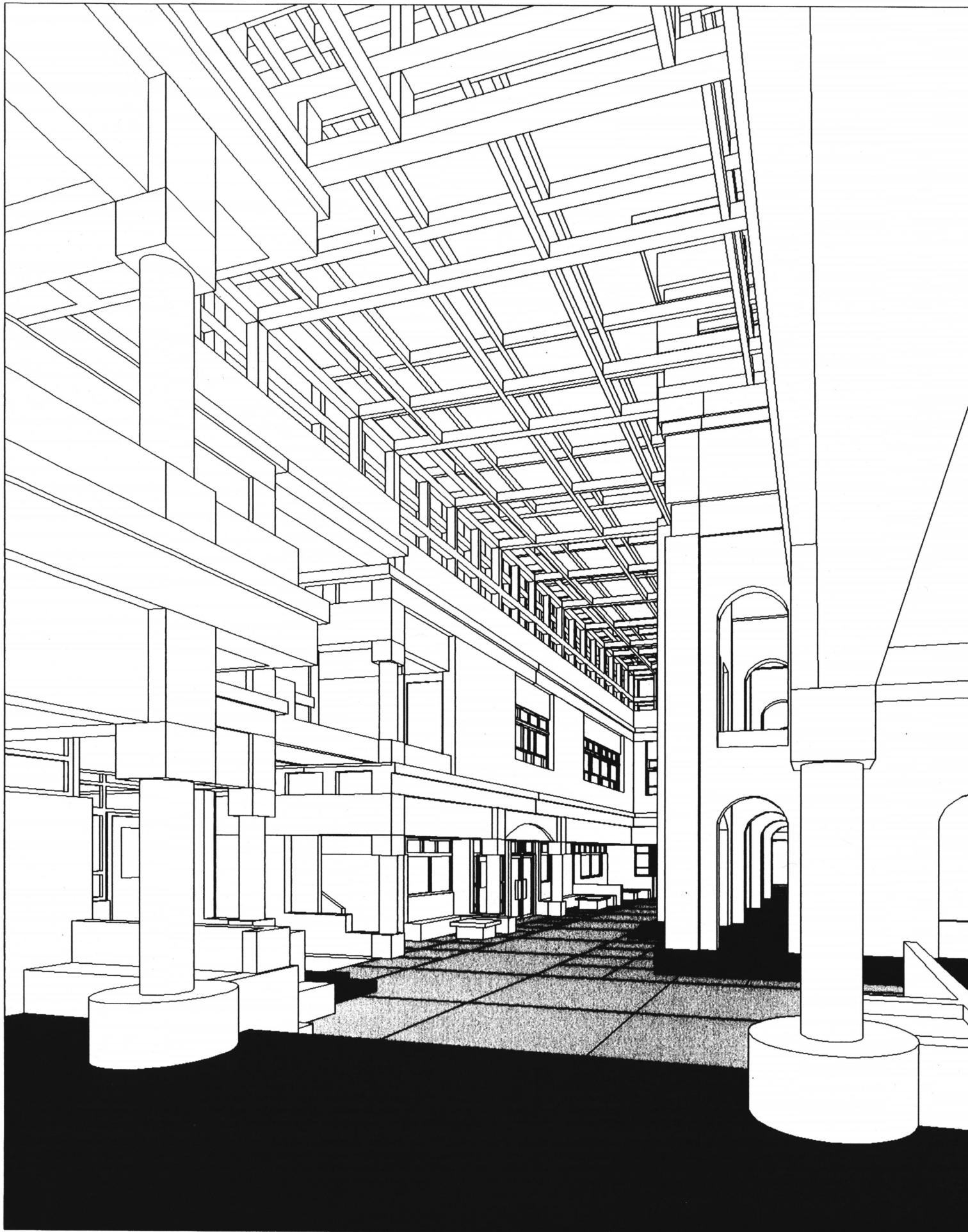
Although the Library Plaza is the smallest plaza, it contains a variety of student activity offices and provides many seats in the form of benches, level changes and the library base. Thus it becomes the center of the school's student activities. As Third Street passes directly through the plaza there is also much movement and change. It is probably the most vital place of the school.

The library is the focal point of the plaza. Its raised base announces its importance. The mass of the library intrudes into the plaza, blocking the view from each side of Third Street, also emphasizing its prominence.

Upon entering the plaza, the skylight overhead rises 6' in height above the street skylight, creating a large vertical space in contrast to the relative narrowness of the plaza.



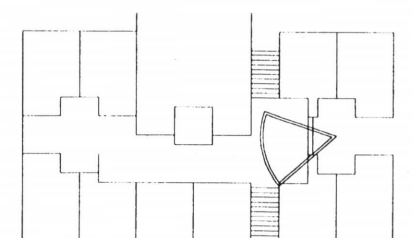
LIBRARY PLAZA



Street entrance to Piazza del Campo, Siena

A two foot elevation change marks the east entrance to the plaza. There are many height changes within the plaza - the library base, the stair streets ascending and descending from the plaza and the raised seating area next to the yearbook room. Only the west exit of the plaza does not require one to step up or down to enter or exit the plaza. Thus the plaza has a unique level in the school.

Many forms of seating are provided. There are seats at the yearbook room's street entrance overlooking the plaza, the raised seating adjacent to the yearbook room, and seating along the length of the plaza wall. At the arcade above street level, seats are placed overlooking the plaza. Seats are grouped around tables, encouraging usage. The plaza becomes not just a place to pass through, but a place to stop and inhabit.



LIBRARY PLAZA

GYMNASIUM

- A Main Gymnasium
- B Secondary Gymnasium
- C Dance Studio
- D Auxiliary Gymnasium
- E Athletic Director's Office
- F Storage Space
- G Restroom
- H Ticket Office
- J Refreshment Stand

ADMINISTRATION

- 1 General Office
- 2 Principal's Office
- 3 Asst. Principal's Office
- 4 Admin. Aide's Office
- 5 Public Address
- 6 Attendance Office
- 7 Conference Room
- 8 Workroom
- 9 Storage
- 10 Nurse's Office
- 11 Examination Room
- 12 Waiting Space
- 13 Resting Area
- 14 Restroom



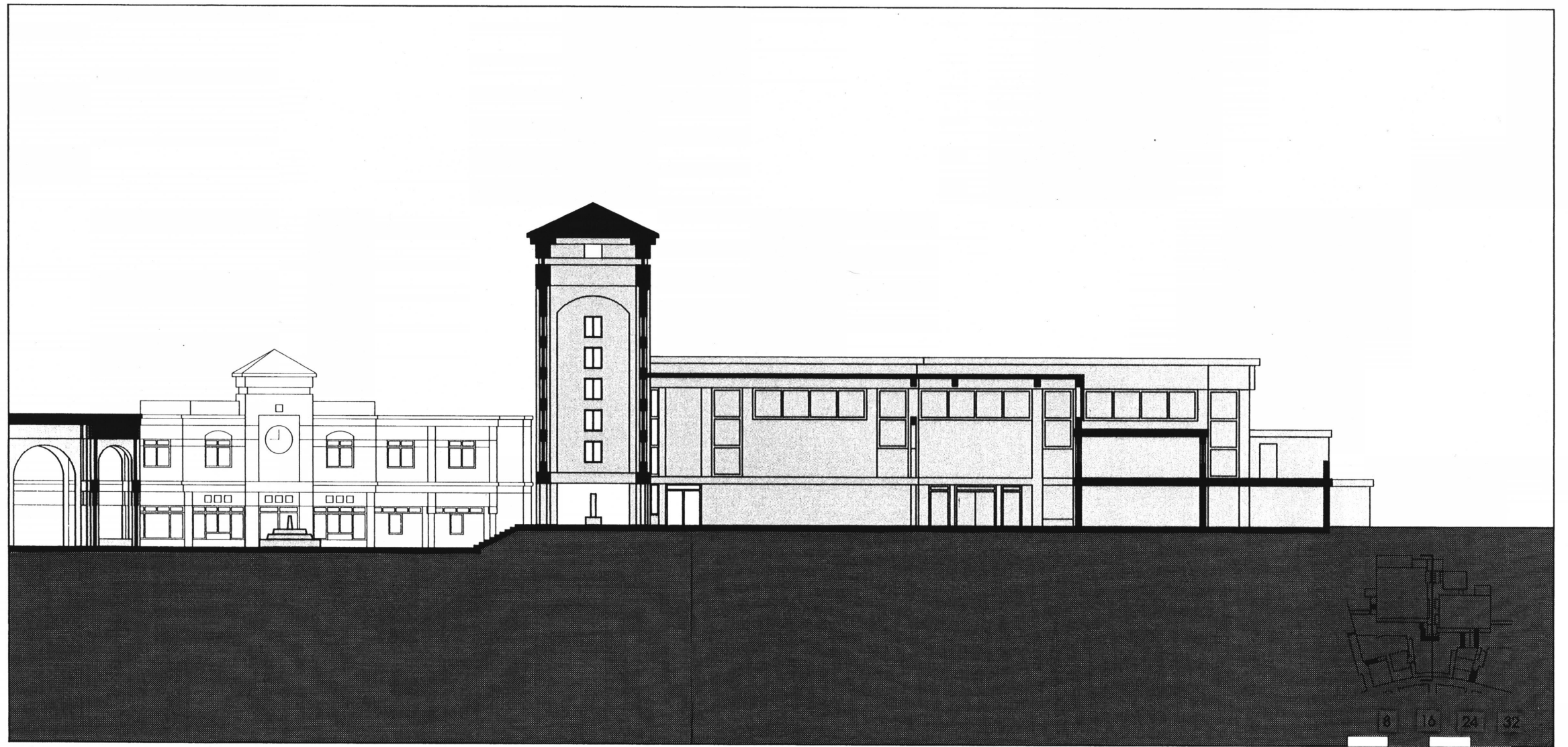
GYMNASIUM/ADMINISTRATION PLAZA

While not as active as the Library Plaza, this plaza houses two main functions of the school - the gymnasium and the administration. All visitors to the school seeking information or attending athletic activities, and parents dealing with the administration or picking up a sick student will use this plaza. This plaza thus becomes a very public plaza, functioning as the main plaza for visitors. Students will also use this plaza to enter the gym. This plaza is unique in that it has two axes, two focal points, is the largest plaza and is open to the sky.

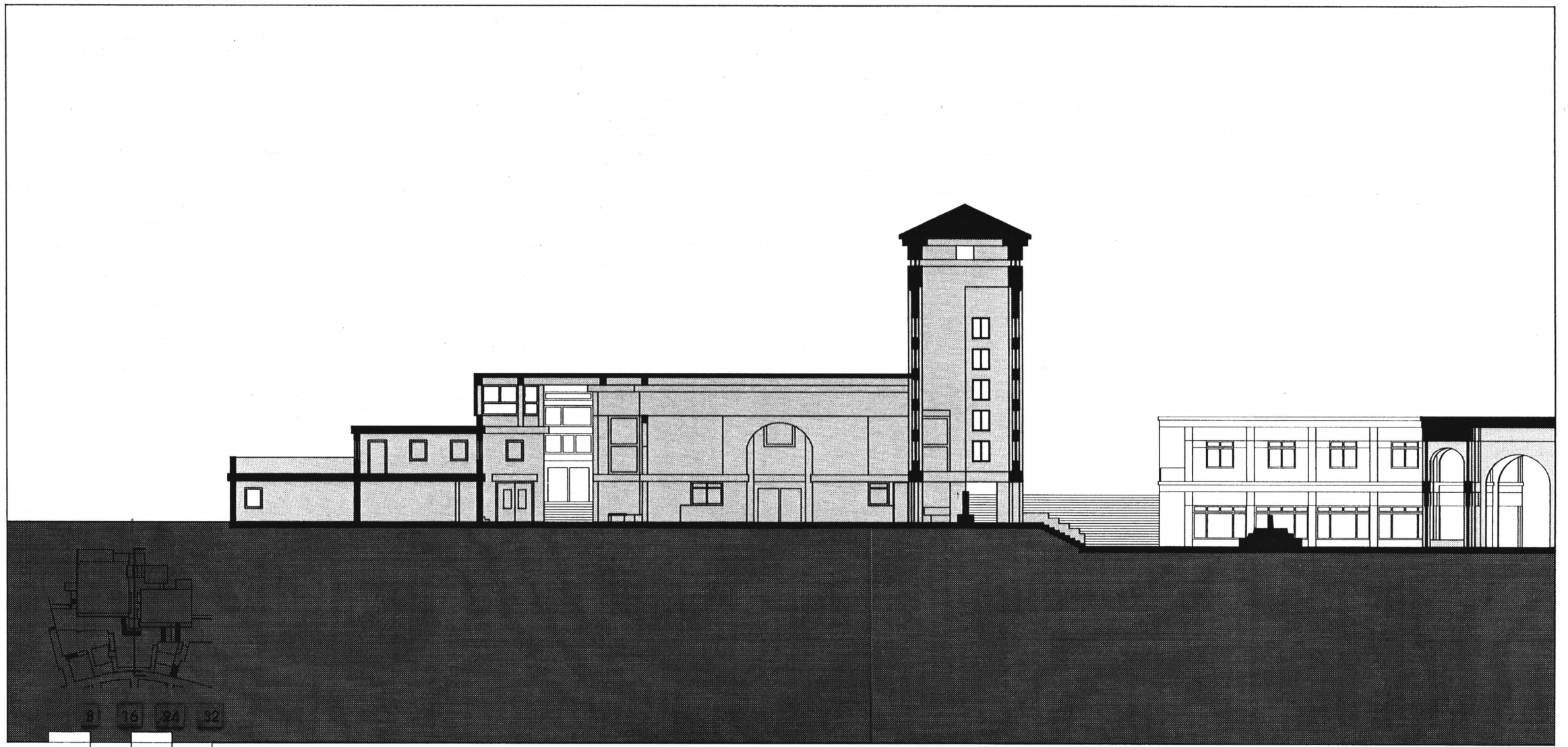
The gymnasium is the major focus of the plaza. Its alignment with the Theater Plaza and theater axis, and the street connecting the two plazas creates a dominant axis. The gymnasium also sits on a 4.5' base, providing a visual guide to its importance. The administration building with its smaller tower creates a secondary focus and a minor axis. The dominant and minor axes intersect at the fountain. The plaza floor pattern acknowledges both axes and fountain.

Both towers mark the entrance to their respective "civic" buildings. After entering through the gym tower, one enters a 20' high covered street. The ticket office is immediately on the right. As one progresses down the street, the entrance to the secondary gymnasium is on the right, framed by an arch. Just before the small plaza is reached is the refreshment stand. An arch marks the entrance to the plaza. The small plaza is skylit and functions as a support plaza to the large plaza outside. In this plaza are the main gymnasium entrance, the dance studio, athletic director's office and restrooms. Stairs exit the plaza, rising to the second level auxiliary gym. The side street exiting the plaza also has a change in elevation. Locker rooms are located at the level below the main gymnasium with two sets of stairs providing access.

One enters the administration building through its tower. The entrance opens into a two story skylit space which functions as a support space to the outside plaza. This space is the general office space where visitors would be received. The conference room and the principal's office, also requiring easy access to visitors, border the general office space to the north.



The plaza floor is completely bordered by arcades - the gymnasium arcade with its arches, the open and enclosed arcades of the administration, the enclosed two-story arcade between the plaza and Third Street, and the enclosed arcade on the east side of the plaza. These arcades perform several functions. They are recessive bases against the sunlit walls, creating an interplay of light and shade. They also function as a transitional space between the open, lit plaza and the darker interiors of the buildings.



The gymnasium steps are multifunctional. They create the base on which the tower and gymnasium sit. The stairs create a prominent height change in the plaza, becoming a visual guide to the gymnasium. They also provide seating for visitors and students either waiting for games or just sitting and observing the activities taking place in the plaza. The east plaza entrance stairs and the fountain also provide seating, making the plaza a place to inhabit.

Along the gymnasium street, the arch marks the entrance to the secondary gymnasium. Inside this gym, smaller activities would take place, such as volleyball matches.

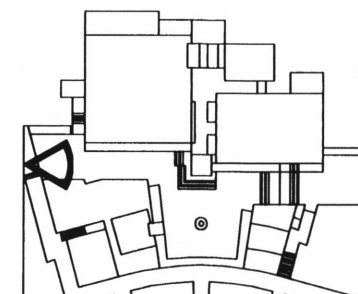


Piazza della Signoria, Florence

The gymnasium/administration plaza is the largest of the plazas. Outdoor and sunny, it is the most relaxed in atmosphere. Large activities such as cheer leading and drill team practices can take place in this plaza.

The tower signals the presence of the plaza and leads one into the plaza. The short street rising to the plaza floor frames the tower and gives it prominence. The tower is further emphasized by a 4.5' base. The plaza must be entered on either side by ramp or stair, creating a unique level.

The gym arcade not only provides a recessive base and street direction in the form of a horizontal band, but is the handicapped ramp to the gymnasium.



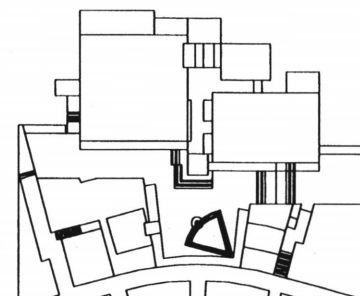
GYMNASIUM /
ADMINISTRATION
PLAZA



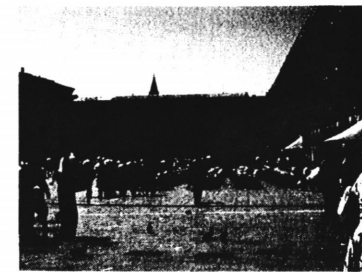
Piazza del Campo, Siena

The Gymnasium/Administration plaza has a dominant axis and a minor axis intersecting at the fountain. The height of the gymnasium tower, its base and its alignment with the Theater Plaza axis make the gymnasium axis the dominant axis.

The differentiation of shadow against sunlit areas creates an interplay of light and shade. The arcade becomes a recessive base against the sunlit wall. The shadows of the towers move across the plaza and the buildings partially shade the plaza throughout the day.



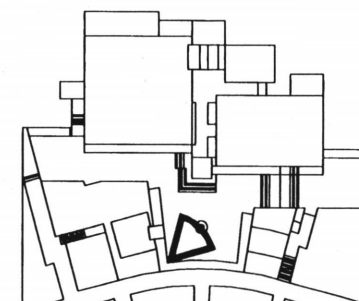
GYMNASIUM /
ADMINISTRATION
PLAZA



Piazza San Marco. Venice

The many forms of movement in the plaza are different than those of the Library Plaza - the fountain with its continual movement of water, the shadows of two towers and buildings moving across the open plaza, the presence of birds, and the use of the two "civic" buildings. The general pedestrian traffic is also different, being composed of several populations - teachers, administrators, students and visitors, compared to the mostly student population using the Library Plaza.

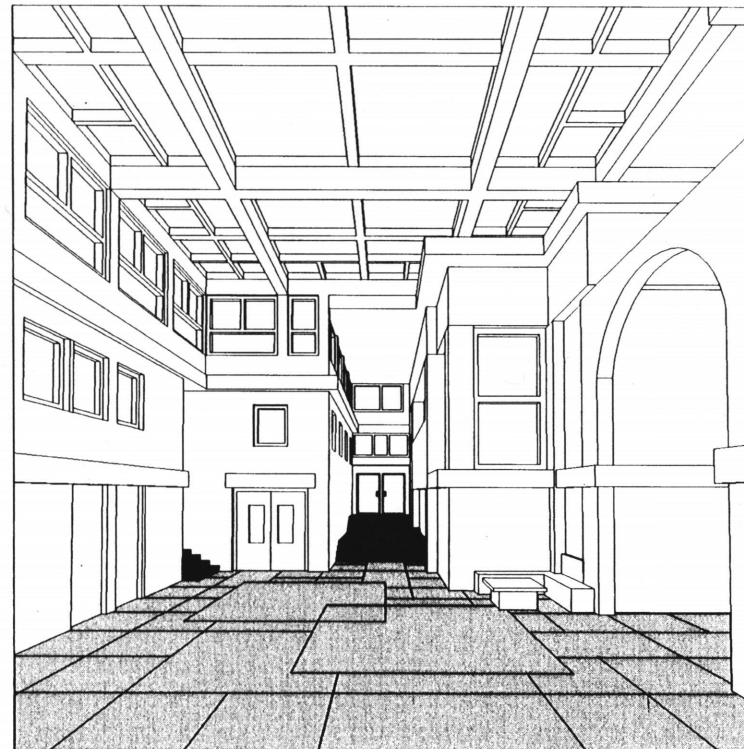
There is a definite in and out to the plaza. Each of the five main entrances to the plaza are distinct. The sloped west entrance, the east stair entrance, and the gym entrance raised on its base, emphasize the unique level of the plaza. The entrance to the two "civic" buildings are marked by towers, emphasizing their importance. An arch frames the entrance to the Third Street arcade.



GYMNASIUM /
ADMINISTRATION
PLAZA

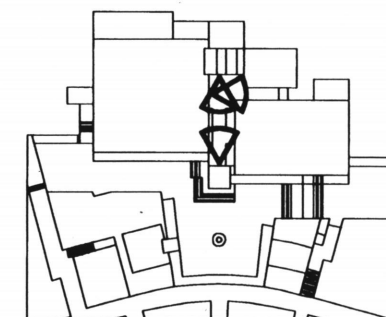


Palazzo Vecchio courtyard, Florence



Support Plaza

The gymnasium support plaza is a secondary space to the main plaza and functions as a miniature plaza. Each of the Plazas have support spaces inside their "civic" buildings. The gymnasium support plaza can be viewed from the plaza through the gymnasium tower, creating the same relationship of anticipation as between the street and the plaza.



CAFETERIA

- A Student Dining Area
- B Food Preparation
- C Serving
- D Loading Dock
- E Teachers' Dining Area
- F Handicapped Entrance

- 1 Social Studies Classroom
- 2 Television Studio
- 3 ESOL Suite
- 4 Teachers' Lounge
- 5 Building Services General Receiving Room
- 6 Restroom

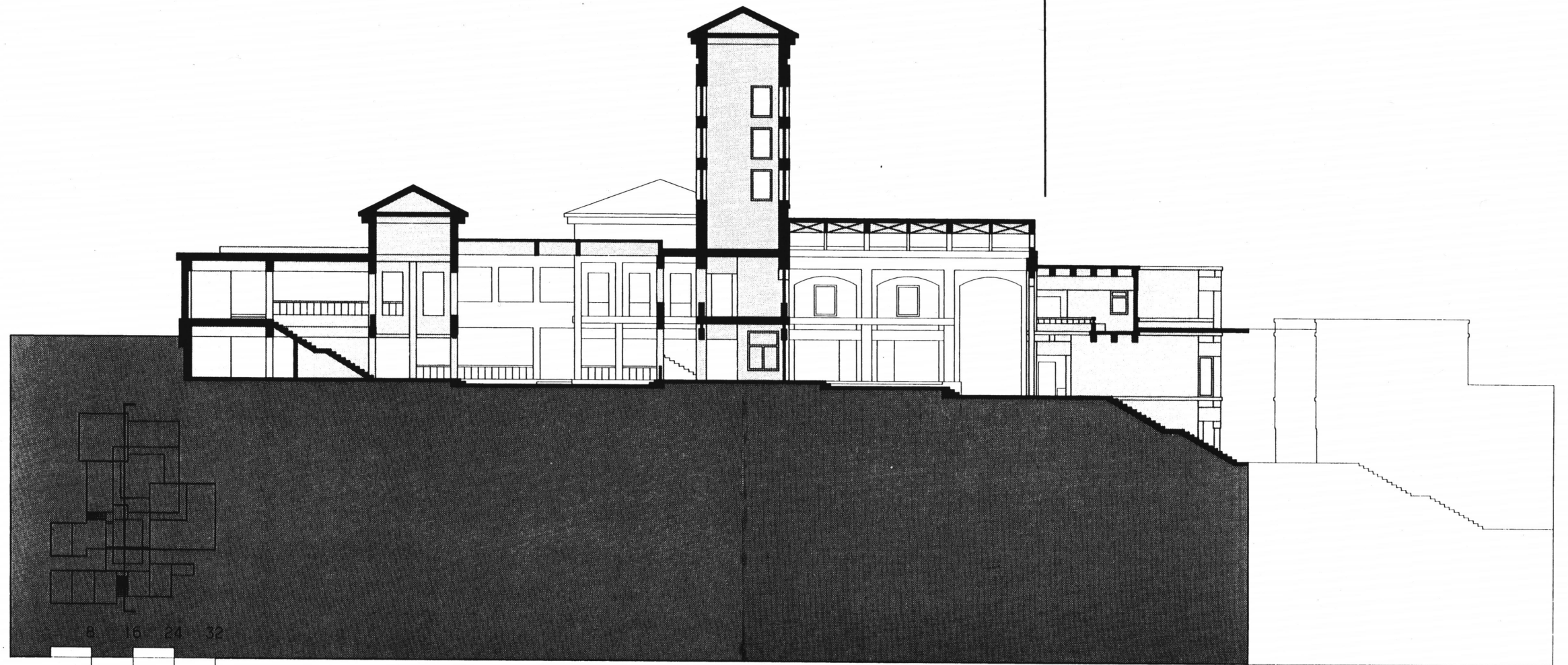
C A F E T E R I A P L A Z A



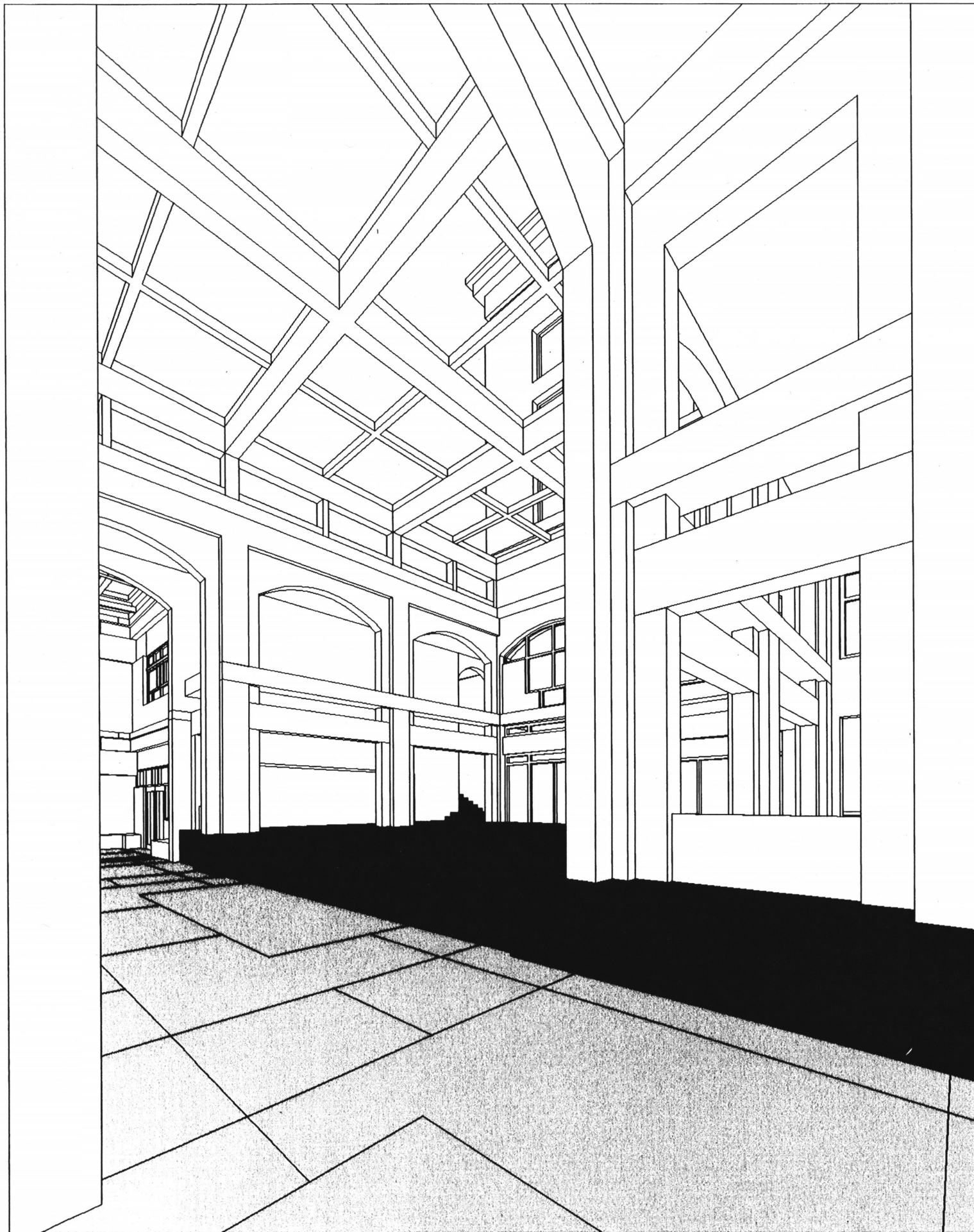
The two-story arcade enclosing the Cafeteria Plaza creates the atmosphere of a courtyard. The arcade extends out to encompass Third Street, forcing the street to pass through the plaza. Arches frame the entrances to the plaza and frame views of the street beyond. The plaza is elevated 1.5' above Third Street and the arcade is elevated above the plaza floor another 1'. The Cafeteria Tower is the focal point of the plaza and is offset from the plaza symmetry.

The Cafeteria Plaza will be a very busy, lively space during the middle of the day, but will be quiet in the mornings and afternoons. The plaza provides many opportunities to sit and eat lunch through the many steps in the plaza. Restrooms are within easy access of the cafeteria as well as the rest of the school.

The tower is the entrance to the Cafeteria. Inside is a large skylit seating area which also acts as a support space to the plaza outside.



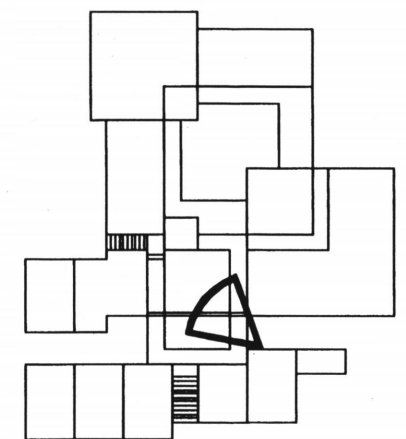
The two main entrances to the Cafeteria Plaza are from Third Street. The two-story arcade bordering the plaza separates the street and the plaza. The arcade is 8' wide and covered. Once inside the plaza, the skylight overhead rises 6' in height above the street skylights. The covered arcade separating street and plaza, and the increased skylight height produce a greater contrast between the narrow street and the open plaza.



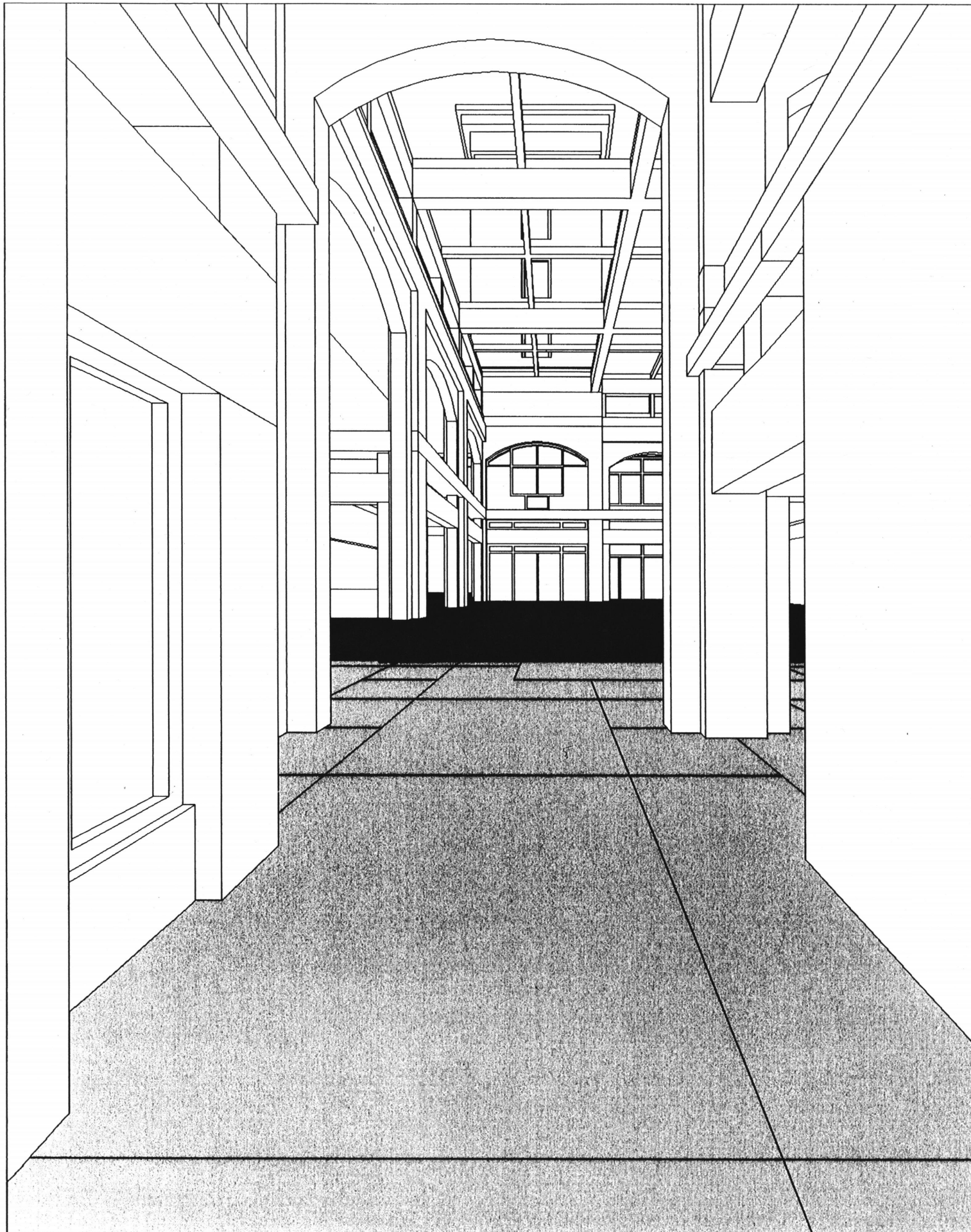
Courtyard, Certosa Monastery

The steps are multifunctional. They create the plaza base, making the plaza a unique level with respect to Third Street and the surrounding classrooms. The base's many steps create sitting areas, making the plaza a place to eat or study in the sunlight, or to watch the passersby. Most importantly, they create a height change which acts as a visual guide, drawing the passerby into the plaza and to the Cafeteria Tower. A glimpse of narrow stairs rising beyond the tower draws the passerby through the plaza and up to the fourth level.

The shadows of the tower, the arcade and the skylight as they move across the plaza create movement, change and enliven the plaza.



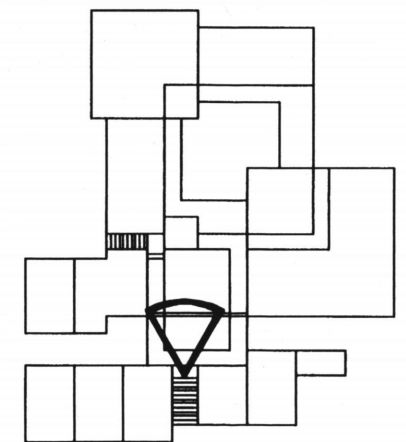
CAFETERIA PLAZA



San Gimignano

The focal point of the plaza is the cafeteria tower. The steps leading to the tower emphasize its prominence. The plaza axis extends from the tower through the plaza to the stairs descending to the second level. At the plaza entrance from the second level, the offset between the axis and plaza symmetry partially hides the plaza from view and draws one into the plaza. The arch frames the view of the tower and creates an entrance to the plaza.

The darker brown brick of the cafeteria and tower, the lighter brown block of the classrooms, and the concrete detailing of the arcades, give the plaza many textures and colors.



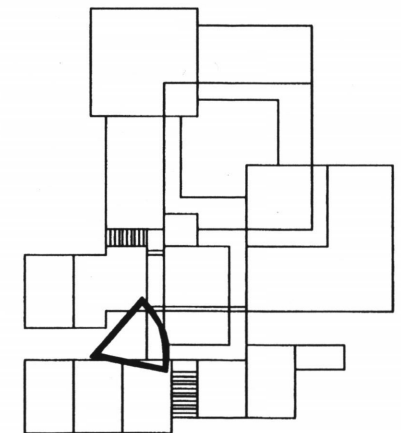
CAFETERIA PLAZA



Plaza del Rei, Barcelona

The Cafeteria Plaza is offset from Third Street by 8', with a small transition space outside the plaza arcade. The widening of the street, and the offset of the arcade's double arches from Third Street, hint at the plaza opening to the left. The double arches frame the entrance to the plaza. On the far side of the plaza, a series of arches mark the plaza exit and frame the exit from the school.

This plaza is unique in its potential for interaction between two levels. The ESOL suite on the south side of the plaza has arcades overlooking the plaza. These arcades have seating, allowing observation of, and interaction in, the activities taking place below. Thus the plaza has two levels of activity and movement and the interaction between the two.



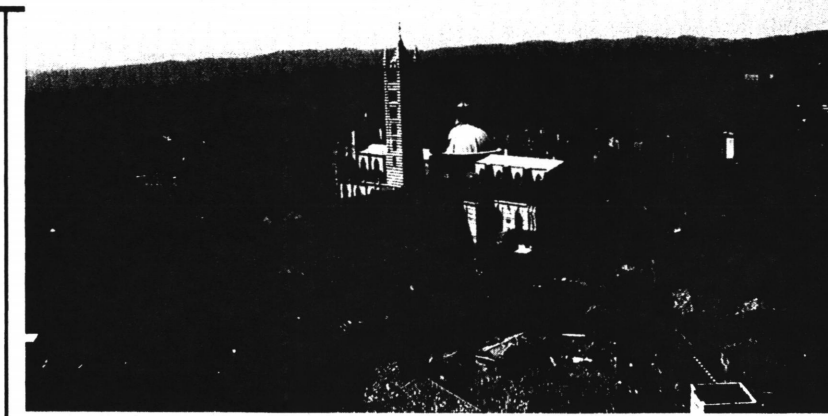
CAFETERIA PLAZA

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Building Program

Sienna



High school with 3000 students or 750 students per class year.

30 students per classroom.

Six class periods a day.

Each classroom is used for five classes, the remaining class period is used for teacher planning time.

Amount of classrooms needed per subject is based upon current Maryland high school diploma requirements and on average student enrollment in course electives.

In addition to classroom space each department has a seminar room, resource

center, and storage space as required by Maryland High School Building Standards. Maryland High School Building Standards also establish square footage requirements for all required spaces.

Example:

English 4 years required
 $\frac{750(4) \text{ students}}{30 \text{ students/class}} \times \frac{1 \text{ classroom}}{5 \text{ classes}} = 24 \text{ classrooms}$

Social Studies 3 years required + senior electives (1/3 of seniors)

$\frac{750(3) + 1/3 (750)}{30 \text{ students/class}} \times \frac{1 \text{ classroom}}{5 \text{ classes}} = 20 \text{ classrooms}$

SUBJECT/ FACILITY	TYPE OF SPACE	NO. OF ROOMS	SQUARE FOOTAGE	SUBJECT/ FACILITY	TYPE OF SPACE	NO. OF ROOMS	SQUARE FOOTAGE	SUBJECT/ FACILITY	TYPE OF SPACE	NO. OF ROOMS	SQUARE FOOTAGE		
English	Classroom	20	800	Art	Art Room	2	1300	Auditorium	House Area	1200 fixed seats			
	Seminar	1	400		Storage/ Office	1	600		Stage Area	3200			
	Resource Center	1	800		Print Lab/ Kiln/ Darkroom	1	800		Orchestra Pit	50 performers			
	Journalism Room	1	400	Industrial Arts	Manufacturing Shop	3	3140		Lobby / Foyer				
	Yearbook Room	1	400		Electronics Shop	1	2640		Backstage	2340			
	Developmental Reading	1	600		Drafting	2	1600		Projection / Sound Room	200			
	Storage	1	600	Music	Instrumental Room	1	1950		Toilet Rooms				
Social Studies	Classroom	15	800			Choral Room	1	1800	Cafeteria	Student Dining Area	9500		
	Large Classroom	1	1000			Small Ensemble Room	1	400		Food Preparation / Serving	3650		
	Flexible Classroom	1	900			Instrument Storage	1	450	Administration	General Office	1	1200	
	Seminar	1	400			Office and Library	1	500		Principal's Office	1	250	
	Resource Center	1	800			Practice Room	2	64		Asst. Principal's Office	4	150	
Storage	1	600	Robe / Uniform Storage			1	350	Admin. Aide's Office		3	150		
Mathematics	Classroom	18	800	Computer	Classroom	2	800	Public Address Space		1	150		
	Seminar	1	400		Complex	Computer Center	1	2400	Attendance Office	1	200		
	Resource Center	1	800	Television	Studio	1	1250	Conference Room	1	300			
	Storage	1	600		Studio	Telecommunications	1	200	Workroom	1	600		
	Laboratory	1	800	Special	Education	ESOL Classroom	2	400 / 800	Storage	1	100		
Foreign	Classroom	7	800			Speech / Language	1	250	Student Government Office		1	400	
	Seminar	1	400			Resource Center	1	400		Guidance	Counselor's Office	8	150
	Resource Center	1	400			Storage	1	400			Center	Career Info. Center	1
Storage	1	400	Library	Circulation / exhibit area	1	750	Waiting Room	1			350		
Science	Earth Science Lab	5		1200	Reading Room	1	4000	Conference Room			1	300	
	Biology Lab	5		1200	Office	1	150	Records Room	1		375		
	Chemistry Lab	2.5		1350	Conference Room	1	600	Registrar's Office	1	150			
	Physics Lab	1.5		1200	Workroom	1	600	Workroom	1	200			
	Preparation/Storage	7		600	On-line Info. Retrieval	1	650	Health Suite	Nurse's Office	1	150		
	Seminar	1		300	Storage	1	500		Examination Room	1	400		
Greenhouse	1	300	Gymnasium	Main Gymnasium	1	10000	Waiting Space		1	100			
Business	Typing	2		1000	Second Gymnasium	1	6000		Resting Area	2	100		
	General Business	2		1000	Dance Studio	1	1600		Toilet	2	40		
	Office Practice	1		2100	Auxiliary Gymnasium	2	1200	Storage	1	40			
	Conference/ Office	1		200	Athletic Director's Office	1	175	Staff Rooms	Staff Room	3	1200		
	Storage	1		200	Locker Room	2	4200		Staff Dining Room	1	600		
Home	Laboratory	2		1450	Team Room	2	500		Building	General and Receiving	1	1000	
	Child Development Lab	1	1700	Training Room	1	400	Services			Office / Locker Area	1	350	
	Classroom	1	600	Office	1	600	Storage Closets				150 total		
	Office	1	200	Storage	2	500 / 1500	Instructional Equipment	1		200 / floor			
	Storage	1	200										

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Acknowledgments

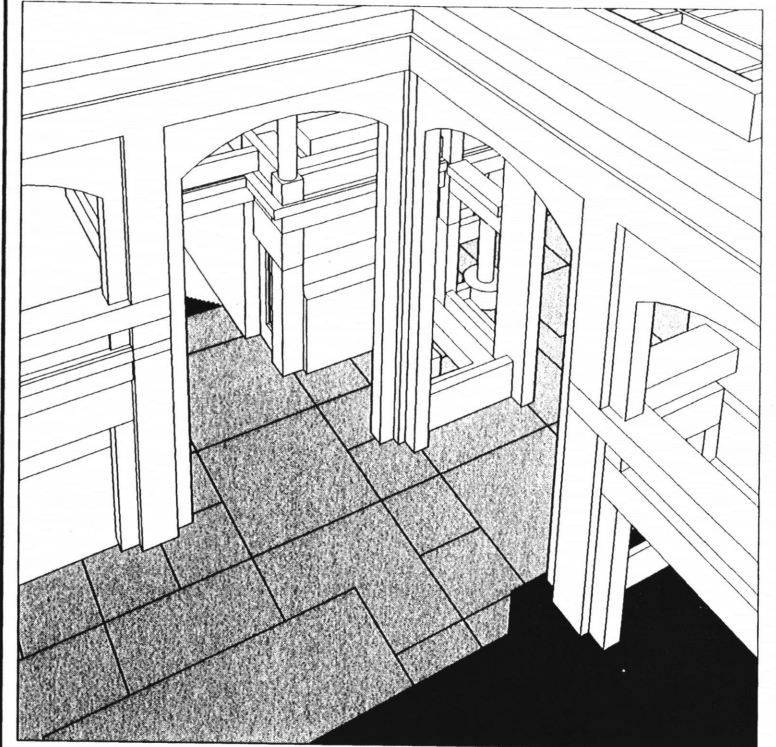


Gymnasium / Administration Plaza

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Cafeteria Plaza