A CONCERT HALL FOR PITTSBURGH:

RESPONDING TO PANTHER HOLLOW

by

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(ABSTRACT)

A building and its environment can work together to express unity and harmony. The concept behind my project stems from the specific nature of a public place and its needs. These elements, synthesized through a process of transformation and redefinition, bring the building as close as possible to its architectural reality. My thesis is that the awareness of order is achieved when an object has established a language that clarifies its existence.

ACKNOWLEDGEMENTS

I would like to thank all
of those who have assisted
me with the development of
this work.

To my parents for their
patience and support.
To my brothers and relatives
who kept me in their
prayers and thoughts.
To my classmates for their
diligence and companionship.
To my friends who gave
something of themselves to
help someone achieve their
goal.
To Luther Memorial Church for
providing a basis for growth
and comfort.
Finally to my committee for
their insight and guidance.

"Commit to the Lord
whatever you do, and
your plans will succeed."
Proverbs 16:3.

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"The plant grows from its seed.
The characteristics of its form
lie concealed in the potential
power of the seed. The soil
gives it strength to grow."
Eliel Saarinen

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IMPACT OF THE SITE

The geography of Pittsburgh is a powerful one that was formed in large part by the forces of the Allegheny, Monongahela, and Ohio Rivers. Throughout time the rivers altered their course carving a dramatic and rolling terrain making travel difficult. As a result, bridges became a dominant feature connecting river banks and hillsides.

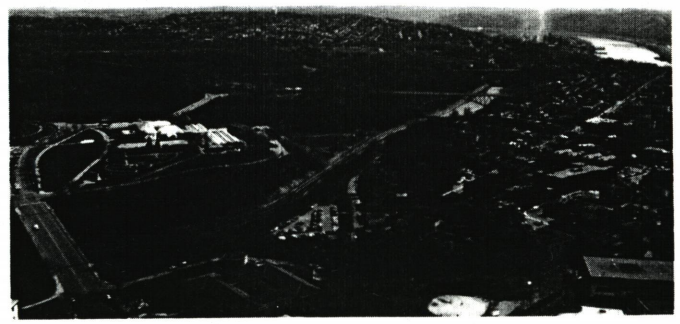
The area shown on the above photos is located within five miles of the heart of Pittsburgh and is adjacent to the Monongahela River. A ravine splits the community of Oakland into two sections: the first is dominated by the University of Pittsbugh, and the second by Carnegie Mellon University. Equidistant from these major institutions lies Panther Hollow, an impressive, yet natural, setting located in the city. The hollow is dominated by the manmade bridge and lake (both entitled Panther Hollow) which give scale to the site. To the South and East is Schenley Park, a wonderful natural space that has long serpentine carriage drives shaped in the tradition of the 18th century romantics, which provides access to this Oasis of the city.

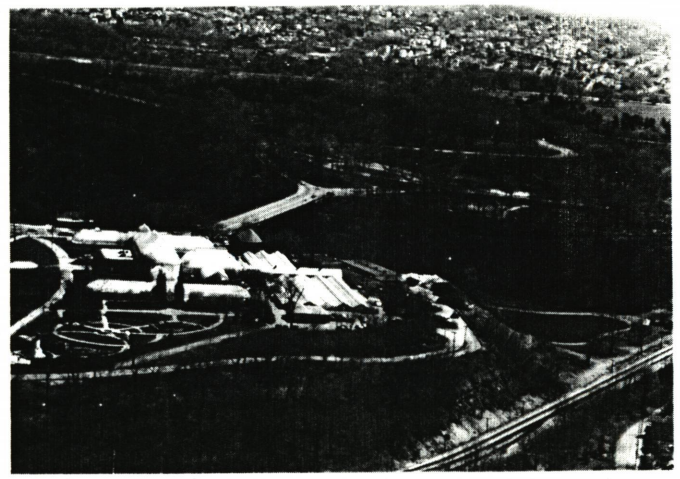
My desire is to make this place a more powerful one by bringing to the hollow a third element that would strengthen the order of the site, while giving more meaning to the already existing features. Panther Hollow is the site for my project and the third element is a Concert Hall. With these initial constructs, the objective of my thesis is to study the means for a building to achieve more by obtaining a strong order that leaves the project with few realistic limitations or demands. The idea is to alter and transform this order within the limits of a developed language to achieve complexity and to express the integration of an architectural attitude at various levels without losing the building's substance.

Determining Factors

The bridge is the dominant element that makes Panther Hollow unique and powerful. Anything built in the hollow had to take into consideration the bridge, its scale, its materials, as well as its ability to permit the hollow to be viewed from above. The U-shaped hollow seemed to be an ideal place for gathering, being surrounded by hills and open to the West beyond the bridge and lake. The given conditions needed to be carefully studied for the site to work as a collective entity rather than disjunct pieces. First, the decision not to change the overall contours dramatically but instead to call out its features and make them more relevant. The Eastern slope, being closed in, seemed to have the potential for a focal point so that the bridge, lake and the Western opening could combine to form a sequence that was completed by the Concert Hall. The second critical view was that the only public access to the hollow was from above with a vertical drop of close to eighty feet and a slope of over thirty degrees.

These initial thoughts allowed the formation of an attitude that, combined with some personal architectural views and beliefs that have developed over the last three plus years, established an order for the Concert Hall that could be judged in terms of appropriateness. Rather than " Does it look like what a concert hall should look like?" I feel that the attitudes mentioned allow the thesis to be extended to any type of building and still be studied to achieve the same aspirations.





A view of Panther Hollow from the North showing the University of Pittsburgh in the fore ground with the Monongahela River in the background.

The terrain of the immediate vicinity with Panther Hollow Bridge and Lake surrounded by the blend of urban fabric and Schenley Park.

A Closer Look at the Site

As a whole the size of the hollow is strong enough to put a large building on it without overwelming the natural beauty of the surroundings. However the order inherent in the building should allow for a transition in scale. The size of the hall had to be an initial statement or billboard to attract attention to itself as a public facility. Yet, the size should not be imposing as one came closer to the building. That is why the entry occurs at the top of the hill and the facade begins at the path near the base of the hill overlooking the bridge and lake.

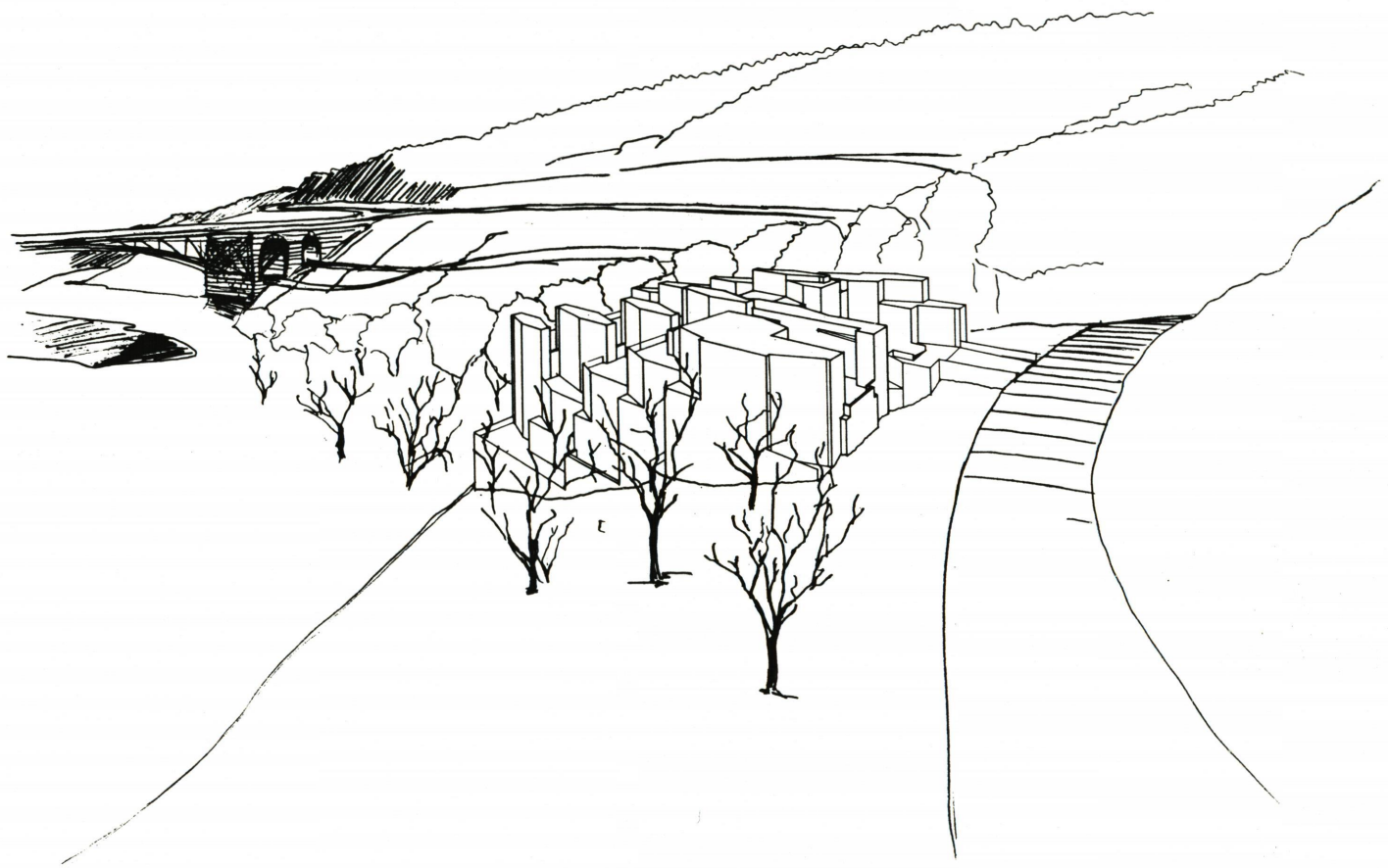
Convenient access to the hall allows most of the patrons

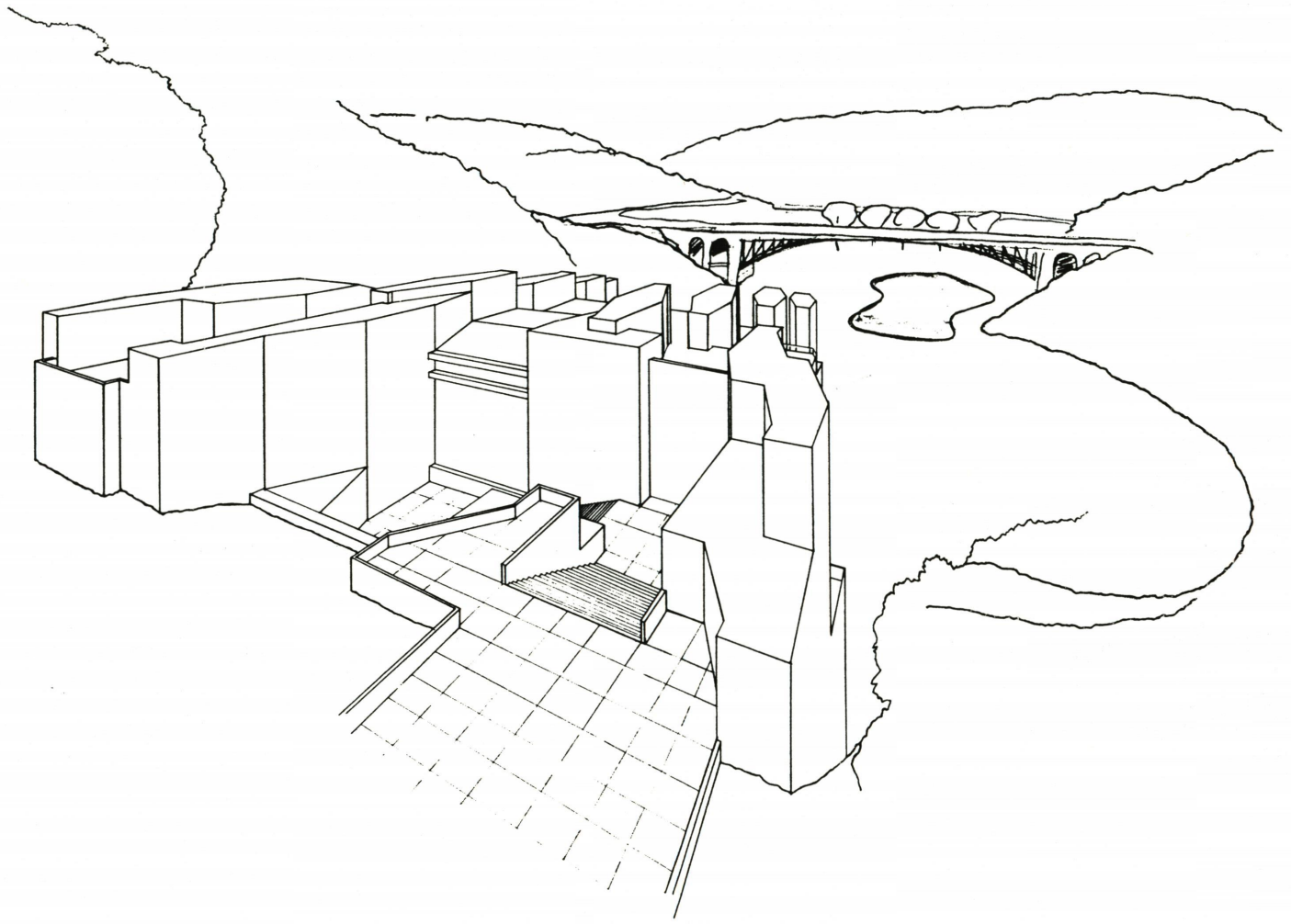
The site of the Concert Hall from the base, middle ground and entry level.(2)

Views of the lake from the base of the site and from the bridge looking down over the open end of the hollow.(3)

Contrasting views of the bridge and its parts.(4)

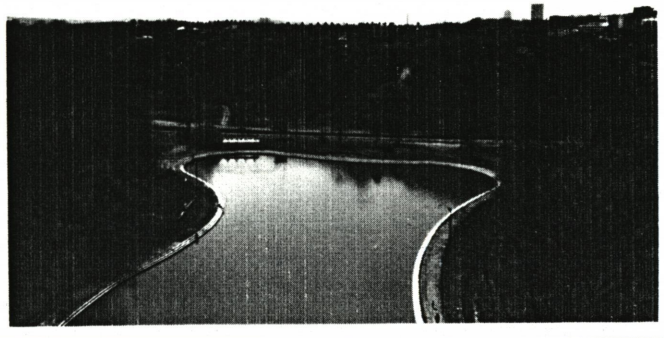
to cross the bridge before circling around the hollow through a wooded area to an entrance that only partially reveals the building. This condition allows for the whole experience of the Concert Hall to be an unfolding revelation as the patrons descend into the building, down the hill, and exit onto a path that leads out of view to the parking area. At this point, other dimensions started to become more important: the movement for the procession from the pre-performance to the performance, to intermission and finally to an out of the ordinary exit, a presentation to the park like setting overlooking the lake. From the initial design schemes, the Concert Hall always had an outer and an inner wall that responded to each other. The enclosure was not perceived as being a continuous envelope, but instead as two different scales, one for the entire site the other for a sympathetic entry. A substantial amount of the building would be underground, preventing an overwhelming mass to blemish the site. A U-shaped circulation pattern, with the base of the U acting as a retaining wall, would allow movement around the building and down the hillside toward the lake. The retaining wall needed two heavy towers to visually anchor the building to the ground. Having a main entry allows the bridge to lose some of its symmetrical properties so that one tower seemed to be carved away into stairs and landings. The path then cuts across the in-between space connecting both sets of piers to the entry tower. This process begins to reveal the immensity of the whole. The building seems more massive where it responds directly with the hillside, and more slender when viewed in context with the sky.

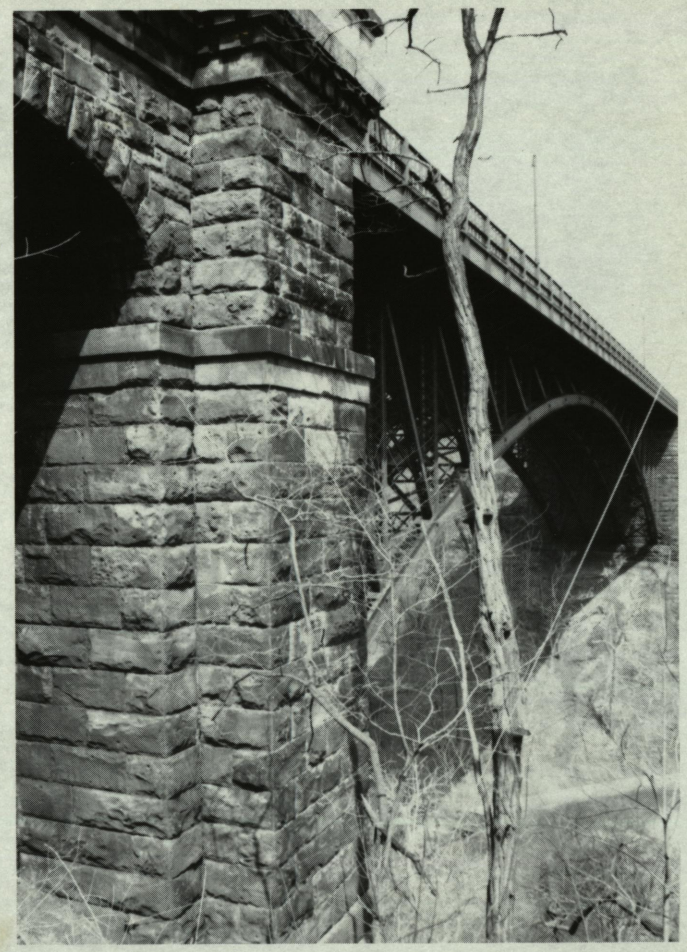


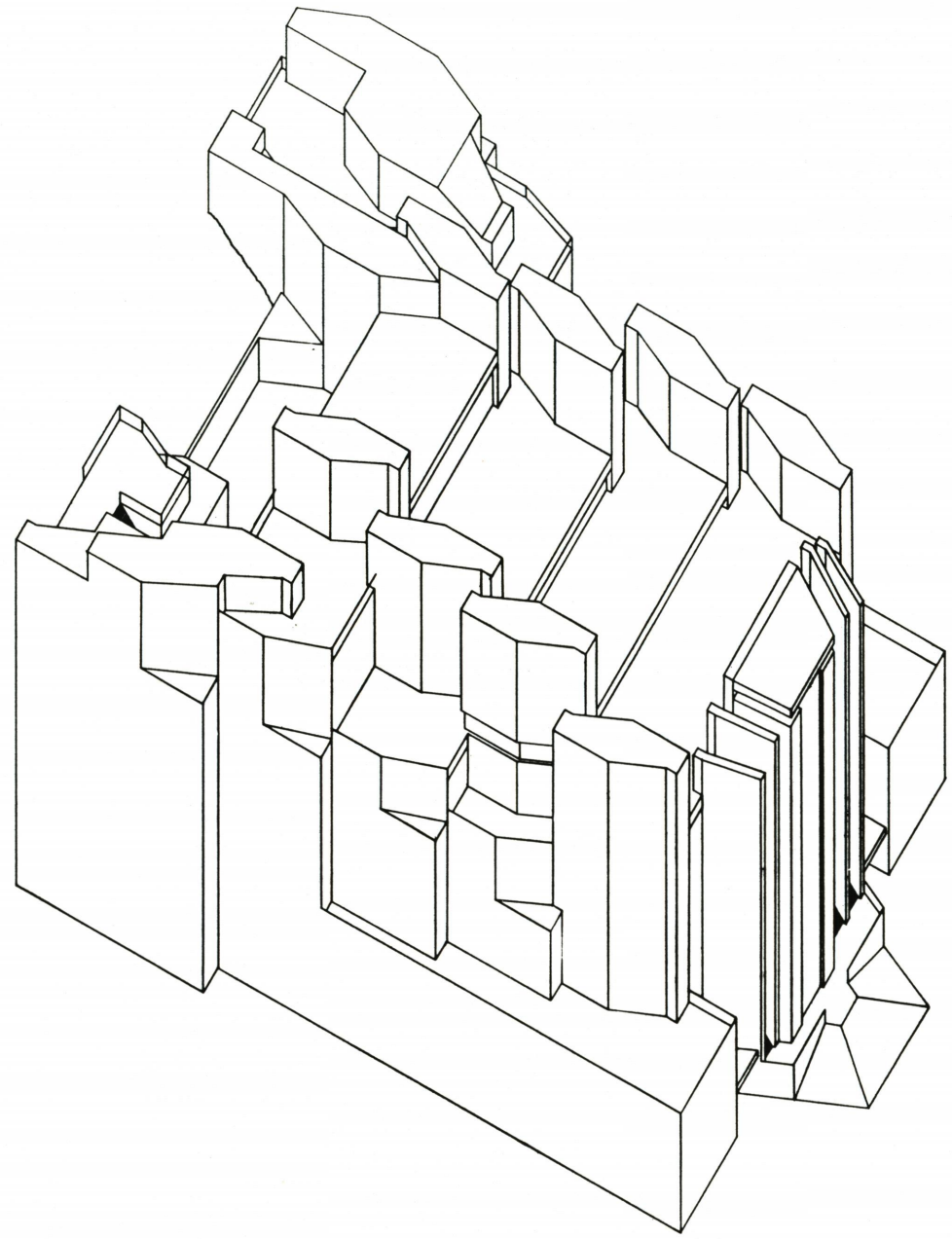


Relationships of Elements to the Site

The axonometric removed from the site (page 4) gives a sense of the massiveness as well as the proportions of the entire Concert Hall which reflect the scale and proportions of the bridge and its parts (overlay for page 4). The bridge is light and transparent spanning the hollow yet, it needs a heavy anchor to ground the structure to the hillside. A similar response is made by the Concert Hall with its towers as well as the piers that allow the roofing members to span the hall with the side walls, helping to support the piers. At the bottom of the hill the above mentioned elements need a two storey base that serves to visually stabilize the other six levels. The orthogonal base is softened by the fins, landing and stairs, that collectively permit a final converging before the patrons disperse.



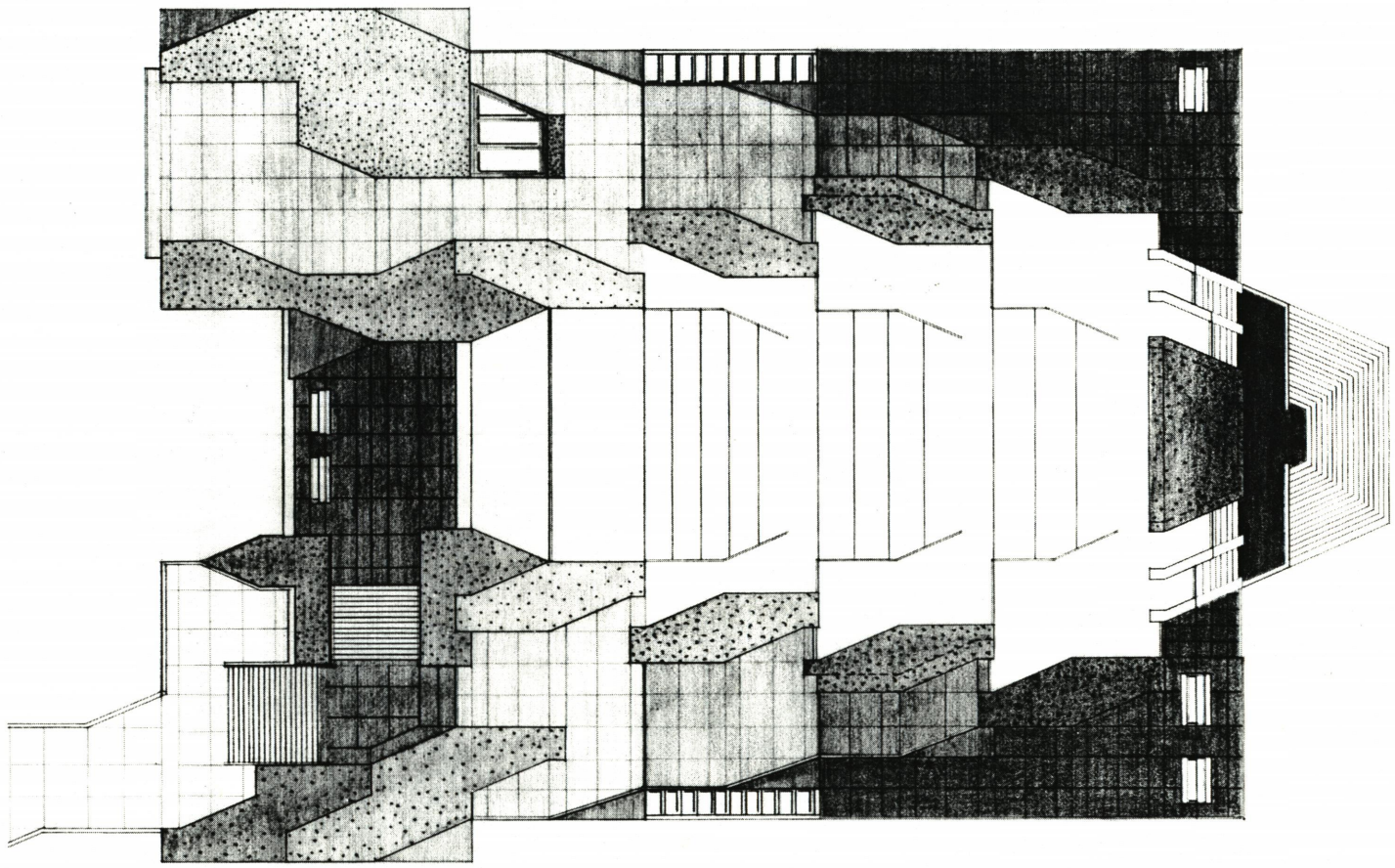




Order of the Object

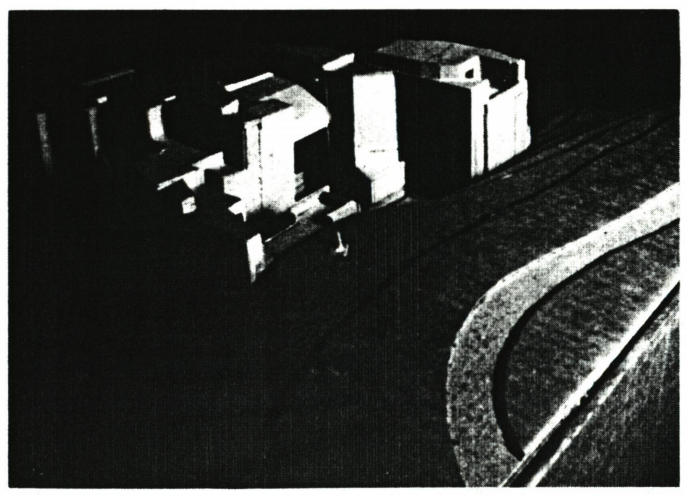
Having studied the general massing and gotten a sense of the building in the Hollow, it is time to look at the object analytically or how the building responds and adjusts to itself. Realizing that the object begins to have enough substance of its own, the importance of the site should become more intuitively appriciated and understood at a certain point in the design, whereby clarification and refine- have to be decided from within the established language.

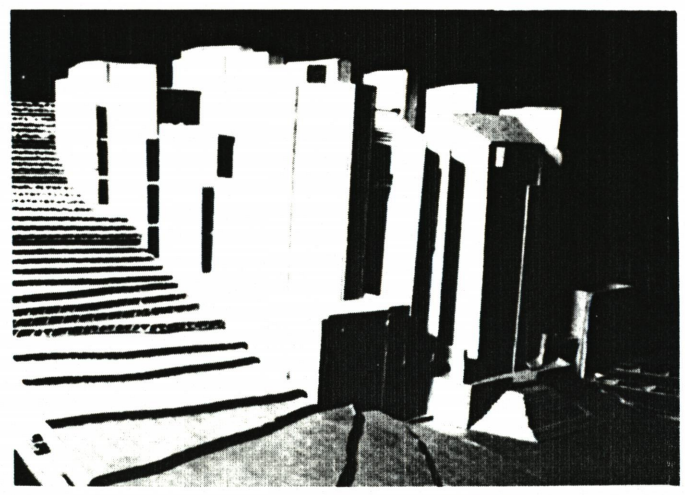
In conjunction with the photographs of the larger model, one realizes that the coffinlike shapes noticeable in plan are perceived as piers that fan out from left to right from an implied origin. The piers transform from short and broad to tall and slender as one progresses away from the towers. The final elements -the supporting walls- hold and protect the piers as they step closer to the main elements. The base, fins, amphitheater stage shell and stairs serve to contain and terminate what otherwise seems to be a continuous sequence.

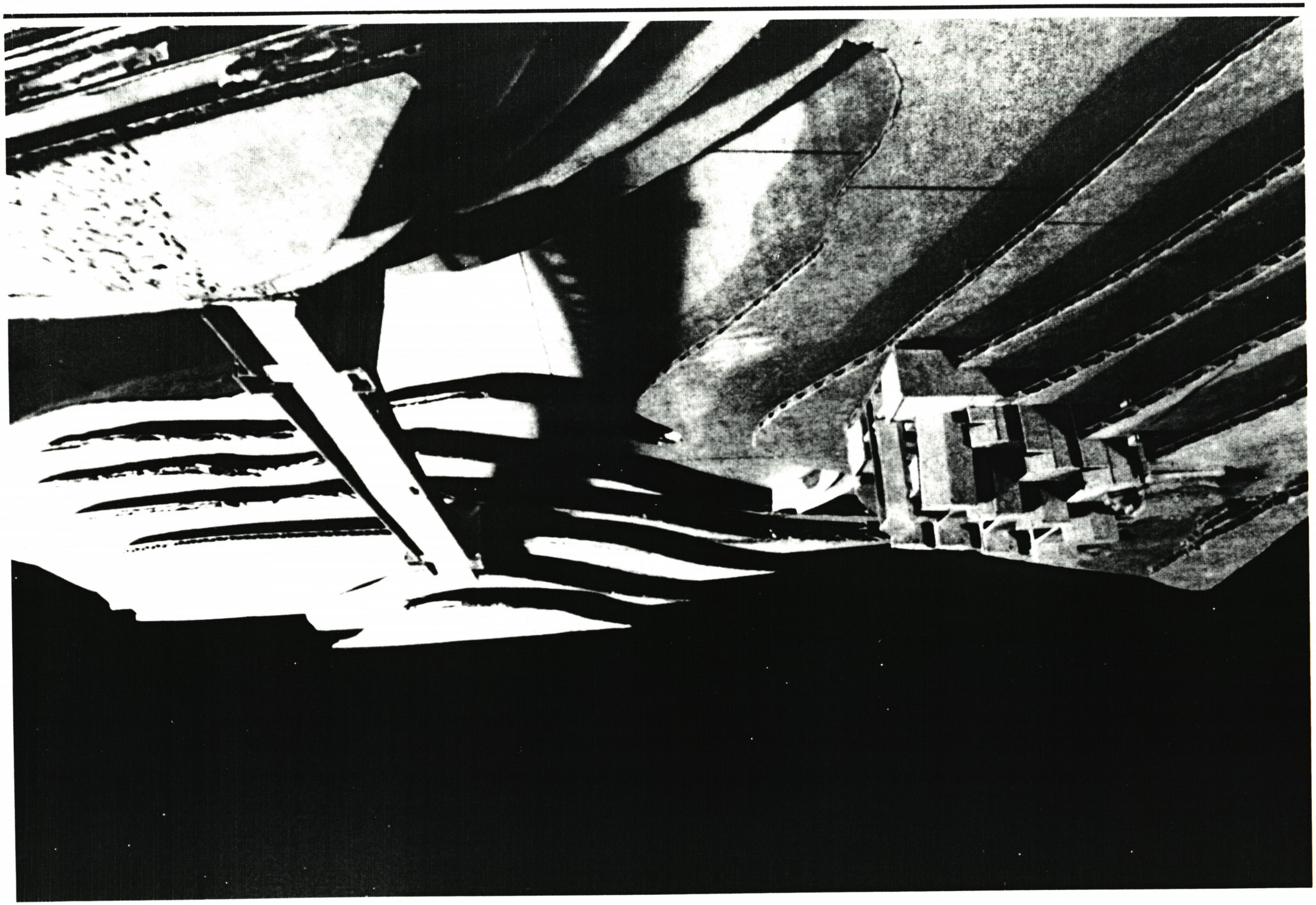


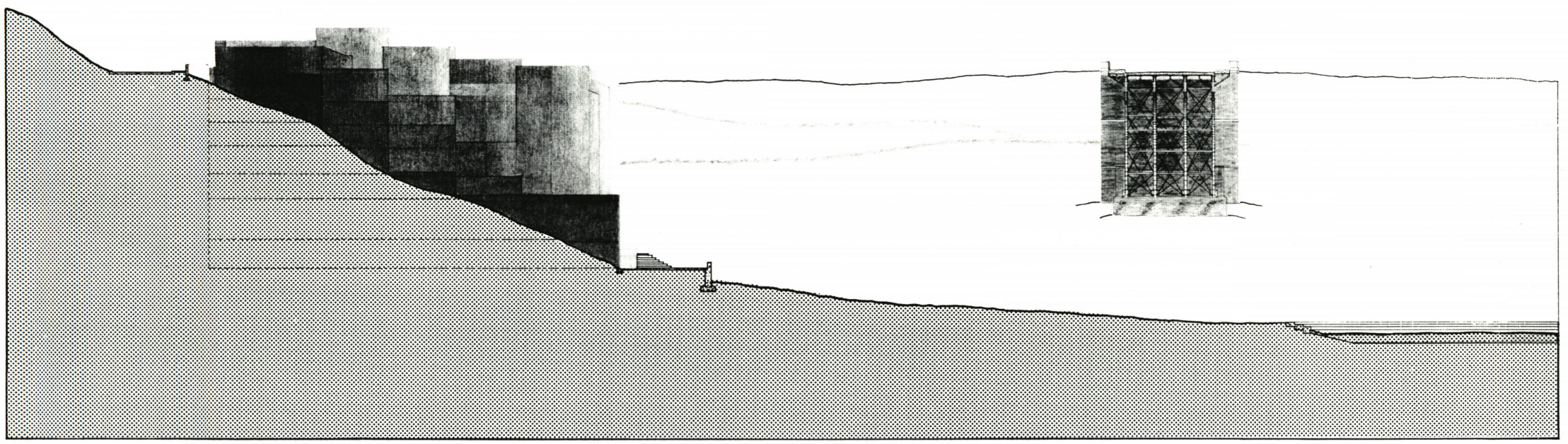
Summary of Thoughts

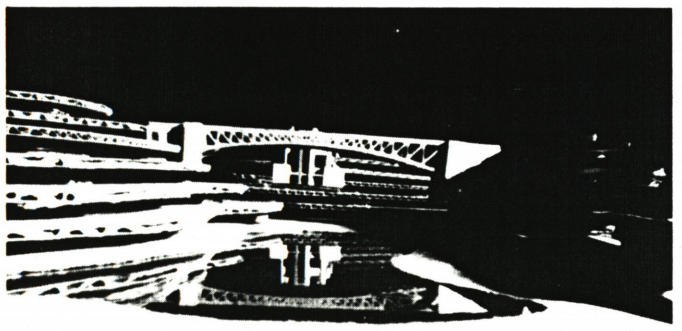
By stepping back and looking at the whole site, one notices how the building almost rolls out of the hillside responding to being freed from the responsibility of holding back the earth. The mass of the building is free to break up, allowing the articulated piers to become less imposing to the site. The slope of the land becomes accentuated by the horizontals of the Hall which calls out simultaneously the descent of the land and the way the building seems to grow as it steps down the hillside.

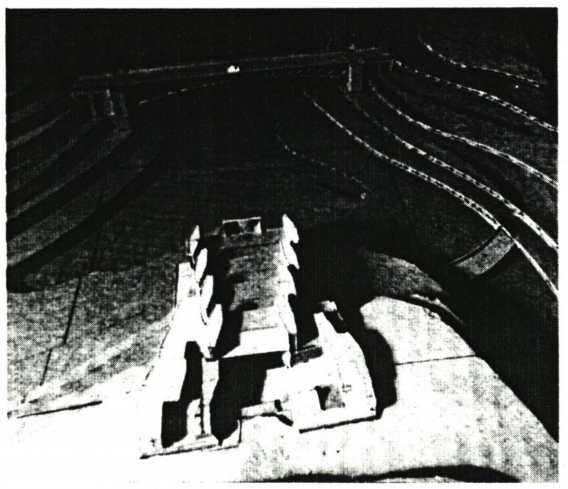












The relationships of the elements of the project: the bridge, the lake and the Concert Hall.

Section through the circulation space on the North side of the hall.(8)

Section through the large public spaces in the central area of the building.(9)

FORMAL RESPONSE

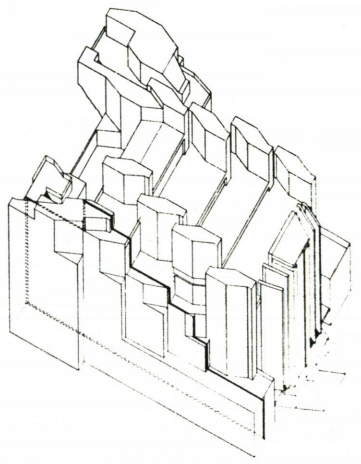
Circulation Space

The next pages focus on the piers, their relationship to each other and how they affect the parts in context in order to establish a language in the building that can contribute to an understanding of the whole.

The circulation spaces are a sequence of spaces that are gradually converging toward the piers as well as stepping down the hillside, while getting closer to the last pier before the two storey base holds the piers and circulation spaces together. These contrasting movements provide several outcomes: a gradual increase of interior space as patrons descend toward their seats, and a reduction of terrace spaces as the space narrows towards the piers. This change in space allows for the piers to become more isolated entities and, as mentioned before helps to reveal the scale of a public facility.

The main attitudes about vertical movement are intended to be directional, so that the first series of L-shaped stairs constantly bring you first looking out over the hollow and then turn you toward the first pier. This pier acts as a balcony on the fifth level looking out over a reception/foyer space which can be entered at the fourth or third levels.

The second series of stairs in the lower levels of the hall are more gradual and focus on the changing perspectives of the view. The larger spaces provide a more solid feeling of enclosure which is compensated for by allowing



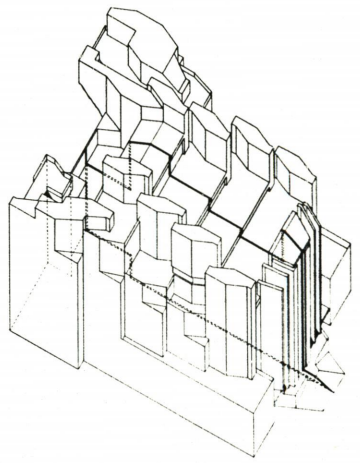
the stairs to open sections of the floor to increase the verticality of the space, thus preventing a restricted feeling due to the lack of natural lighting in the base. The continuous set of stairs also leads directly to the ground floor exit, allowing for uninterrupted path out of the building.

Concert Hall Section

As the circulation space encompasses the perimeter of the building, the larger public areas occur in its central part. The spaces in this core include: the rooftop amphitheater, the entry foyer/reception area, the concert hall and the intermission area (behind the seating area). A six storey height exists from the ground level to the roof structure allowing for many opportunities and freedom to design the ground spaces. A derivation of the piers provide the stepping roof planes for the amphitheater while permitting some daylight to illuminate the angled roof planes.

Having the stage set into the hillside enables the dramatic space for the intermission activities. The reception space above the stage has a strong relationship with the entry allowing for people to be seen and also the opportunity for interaction between the performers and their patrons. Large spaces are reserved for rehearsal and recording studios under the seating on the ground level. All of the above mentioned spaces are enhanced by the stage decision.

The four storey space behind the stage acts as a



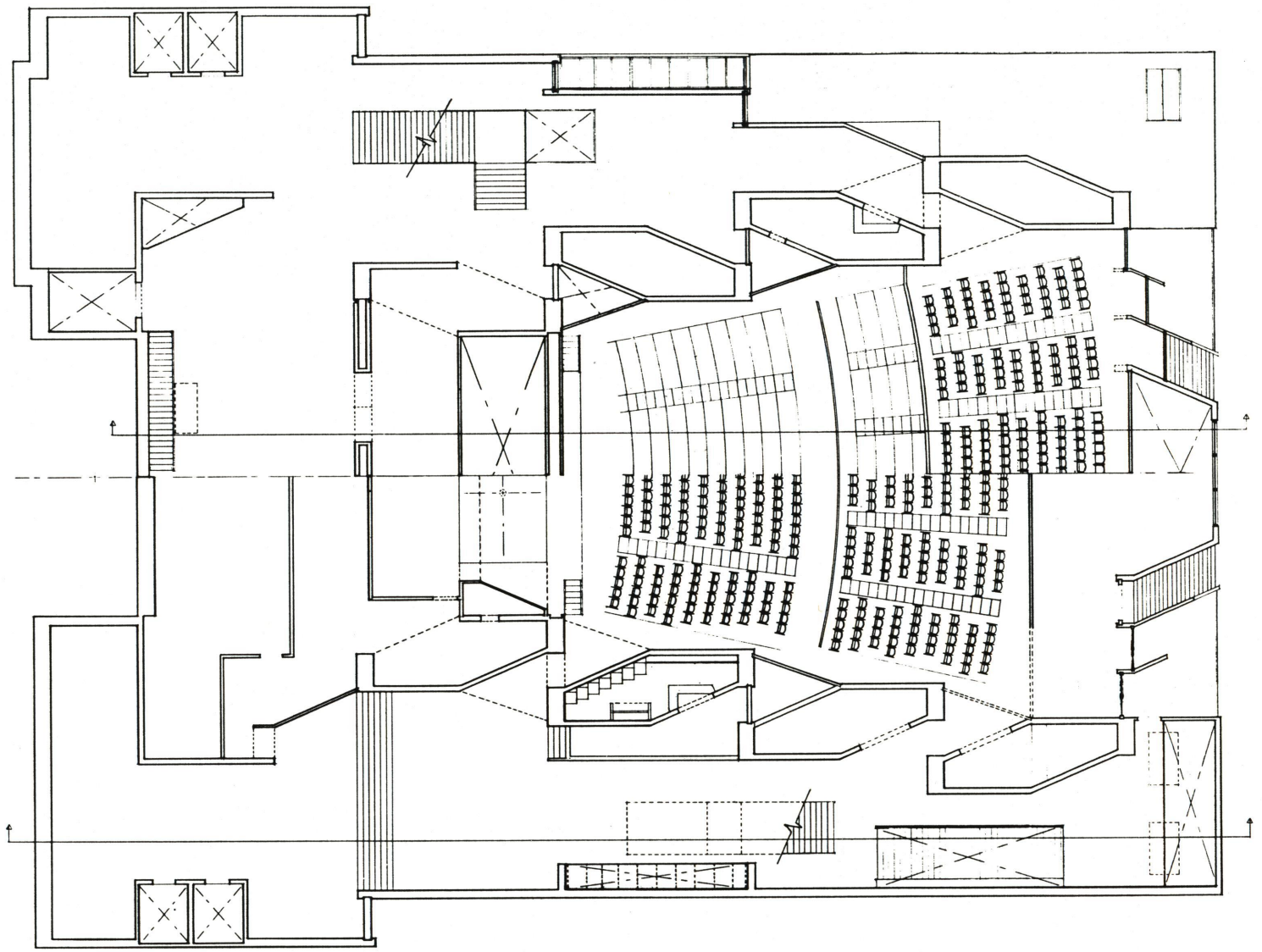
retaining wall with rooms in it providing facilities for the performers as well as a landing for the entry.

Split Level Auditorium Plan

After studying the section of the hall one can immediately sense the similar way the stepping down of the lower set of piers in plan is reinterpreted in the stepping of the roof. The upper half of the plan is the third level which intertwines the circulation space with the reception as well as the entrance to the balcony seating. This is also the level where the L-shaped stairs end, leading the patrons into the first pier which acts as a passageway into the foyer/reception space.

The lower half of the plan designates the main level with two entries into the Concert Hall: an access to the back stage area and one of the entries to the intermission space. A separation of public and private space is announced by a row of steps where the tower meets the circulation space. This level is the first within the base where several skylights and light wells are present to compensate for the solid end wall that prohibits the seemingly ever present view of the bridge and lake.

Throughout the building, the hollow piers can be used in several ways from coat check booths to lounges, for an elevator, passageway, or even for storage. The spaces between the piers are usually thresholds, but are also used to visually connect two levels by adding a lightwell to this unconventional space. In the circulation spaces these wells help to give more presence to the piers rather than just being a series of angled walls.



Top half of the plan is the third level with the first level filling the bottom half of the plan.

Subtle Changes in Plan

The split level plan informs and helps to understand the Concert Hall in its functional aspects. Looking at all eight levels, however, reveals more the sense of its order. Viewing the plan from the upper levels and then down to the base allows one to notice subtle changes, to be noticed both hierarchically and spatially. The plan also cuts through the ground showing how the building becomes surrounded by the earth at the base of the building.

At the upper levels, the interior space is very small in comparison to the amphitheater or terraces while a gradual reversal occurs until the main spaces dictate the majority of the space to be interior space. The next pages help to graphically sense these changes in respect to each other. The lower levels (first and ground) seem to decompose from a very complex plan in the upper levels to a literal translation of the building's order. The ground level also takes a public building and transforms it into a space dominated by the employees and performers of the facility.

An interesting dialogue occurs between the piers and the outer walls that help to enforce the strength and power of the piers. Not only the walls step down the hill to reveal the pier more with the slenderness of proportion to a column, they also step in to help support and contain the piers that seem to continue to fan out perpetually. This stepping is softened by angling the upperlevel wall of each bay which in its turn reinforces the language of the whole.

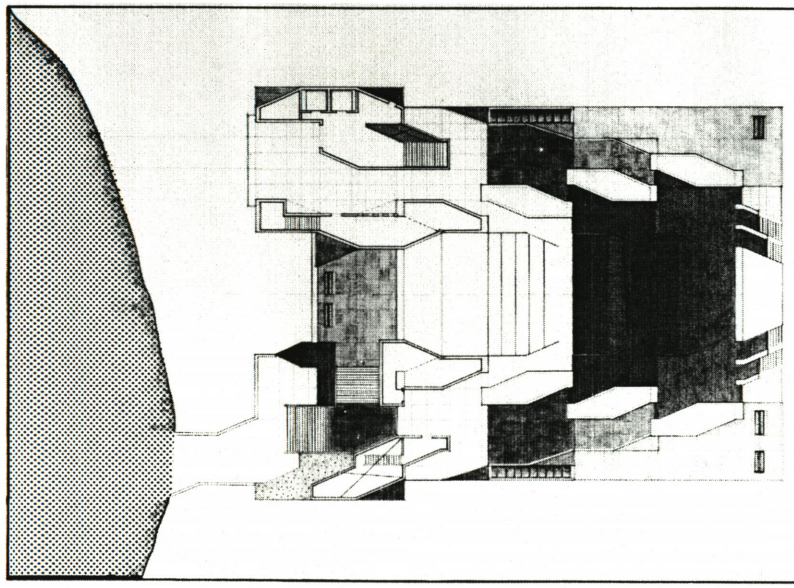
Seventh level plan entry from the street accompanied by the sixth level plan.(11)

Fifth level plan accompanied by fourth level plan with main entry into the building.(12)

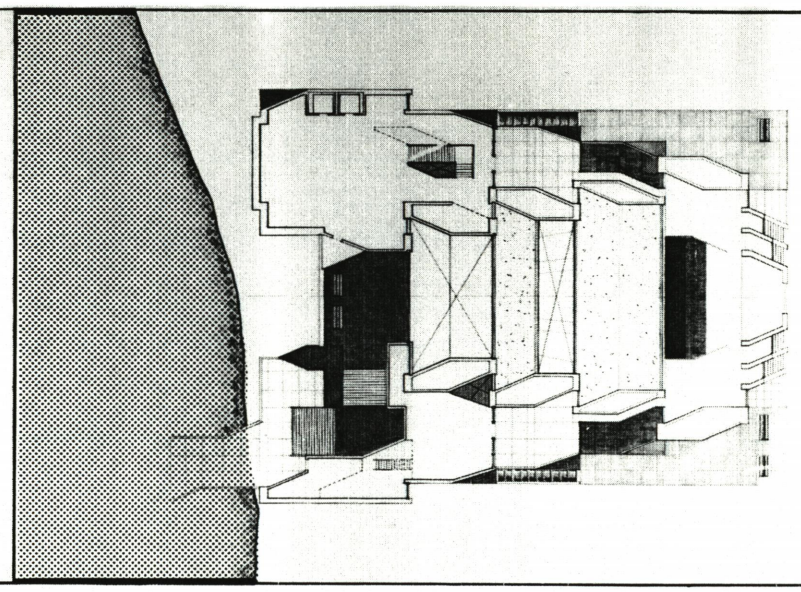
Third level plan entry accompanied by the second level plan showing the large terrace on top of the base.(13)

First level plan main concert hall level with separation of public and private sectors accompanied by the ground level plan noting the exits and private spaces.(14)

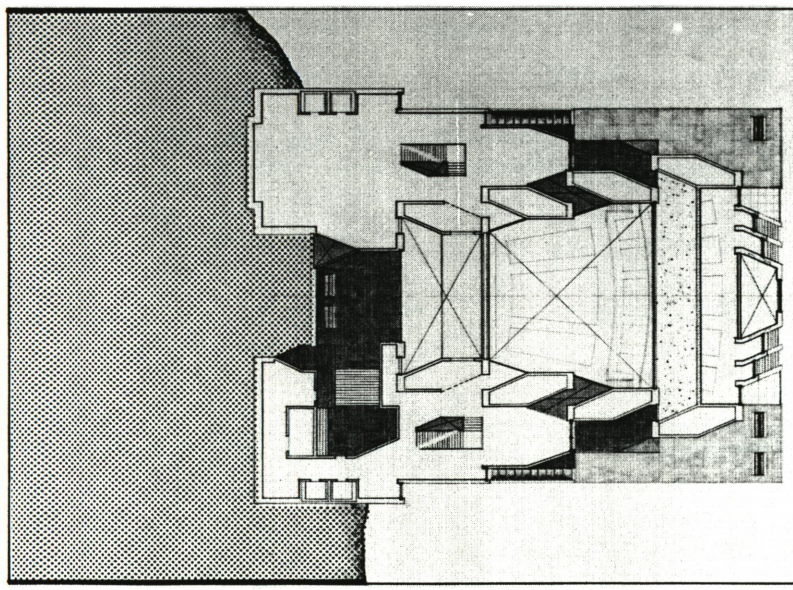
SEVENTH LEVEL



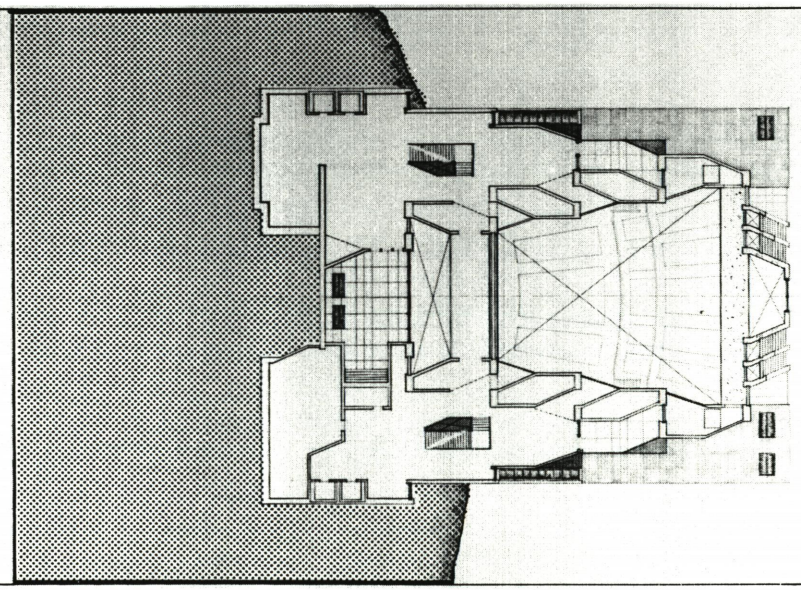
SIXTH LEVEL



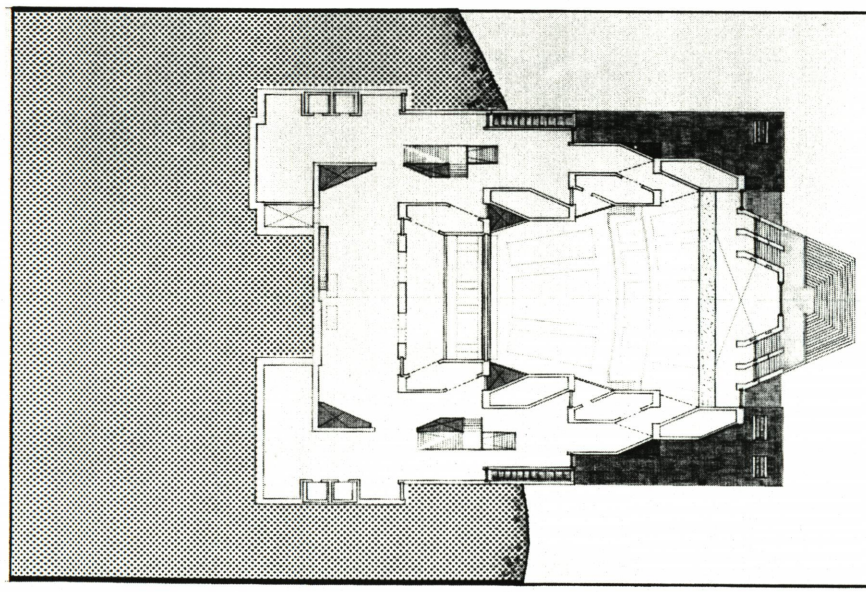
FIFTH LEVEL



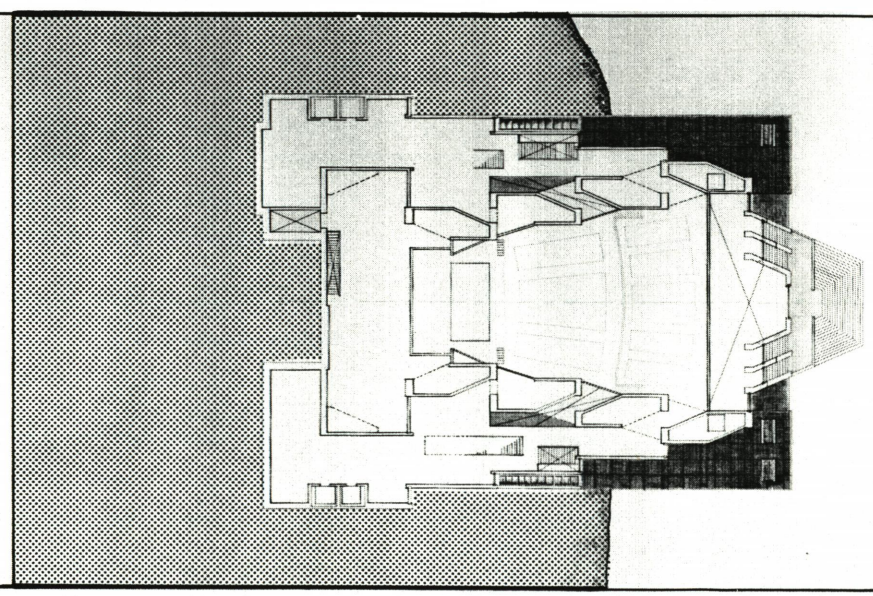
FOURTH LEVEL



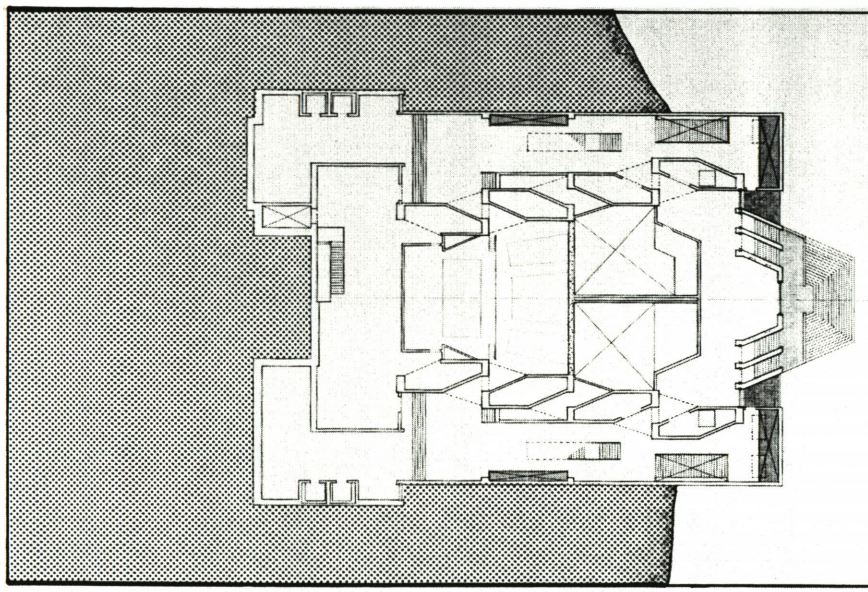
THIRD LEVEL



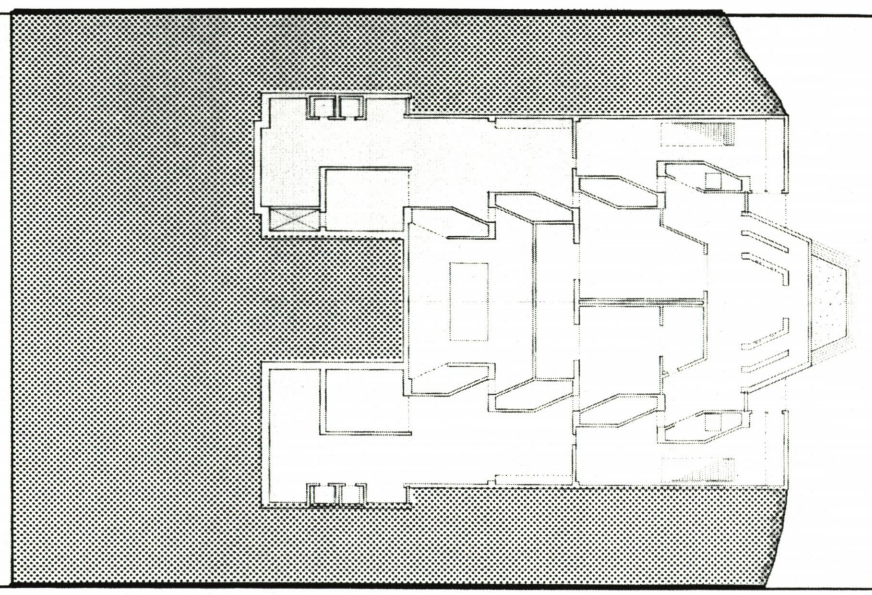
SECOND LEVEL

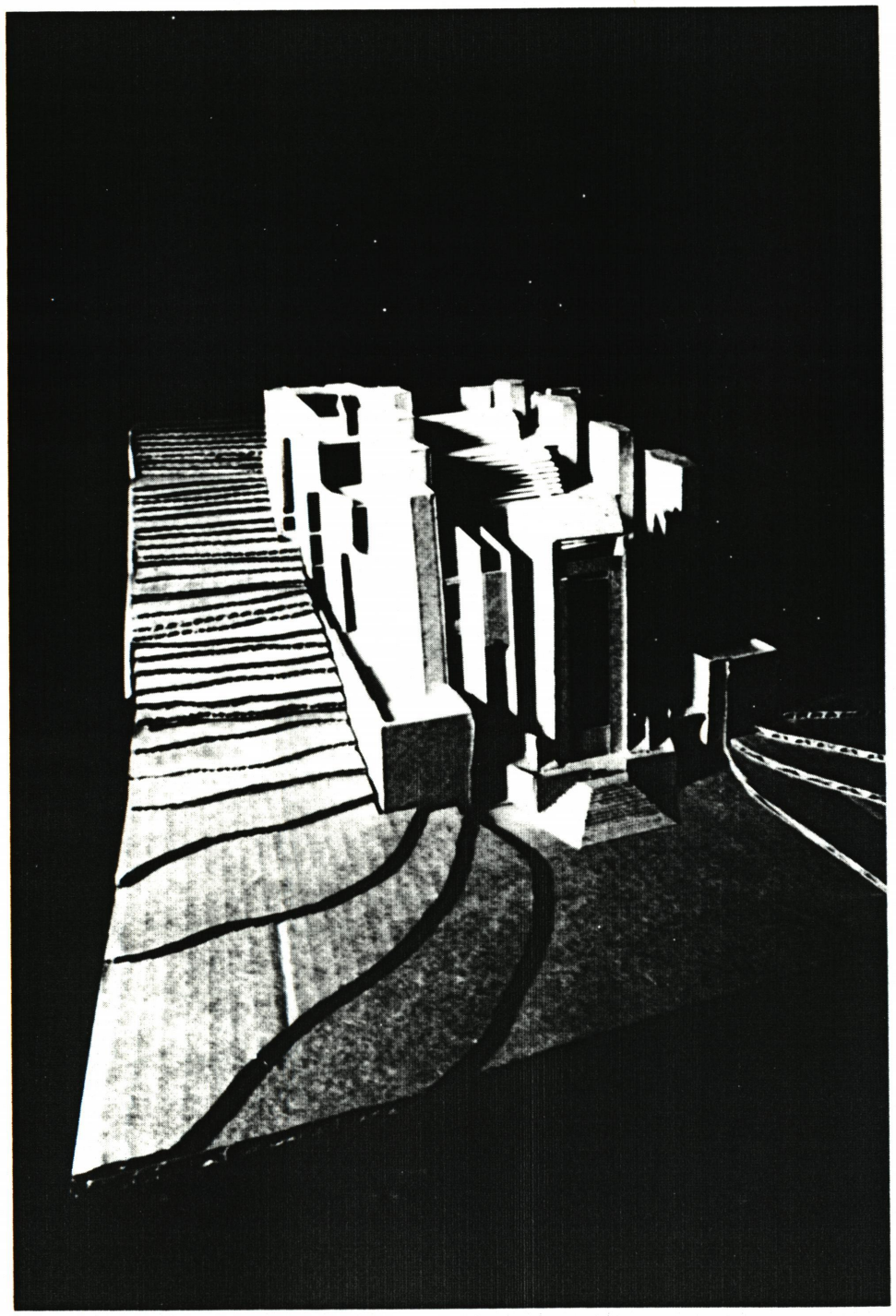


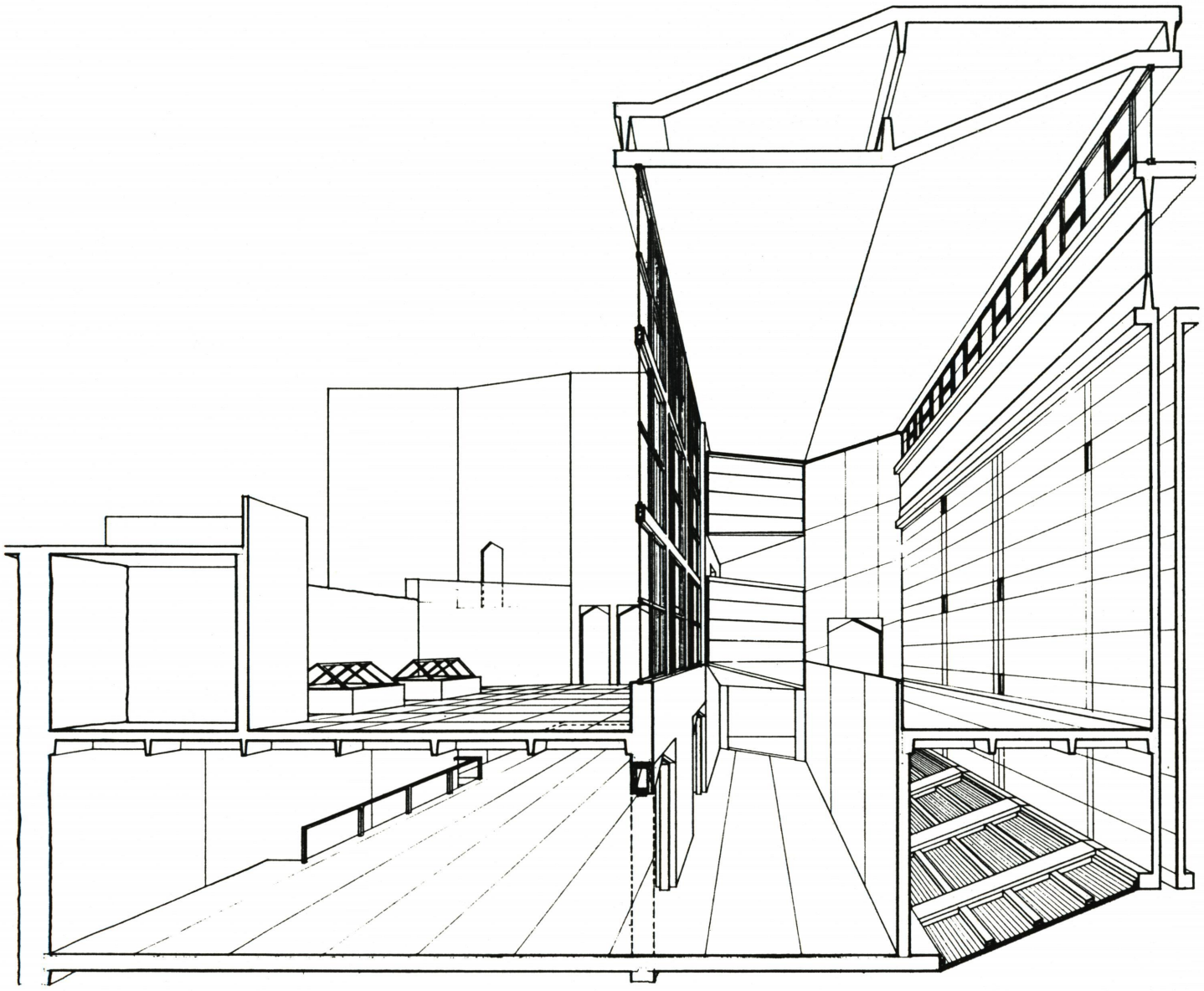
FIRST LEVEL

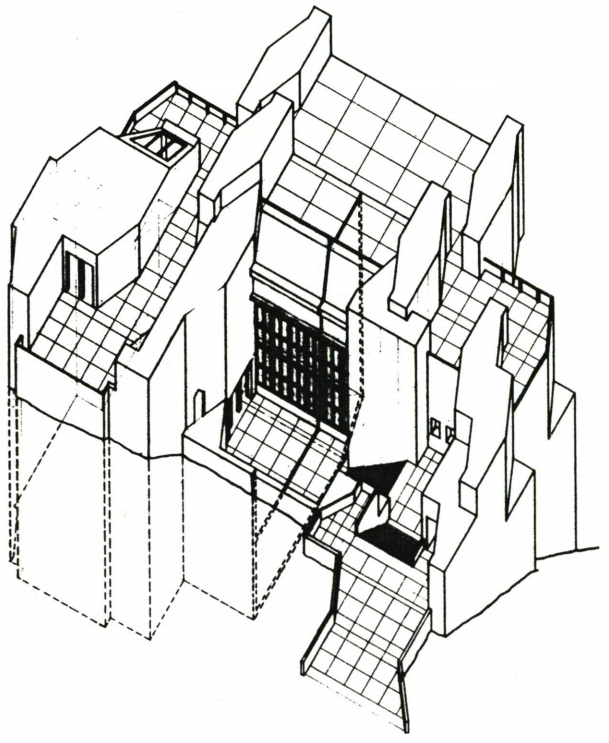


GROUND LEVEL







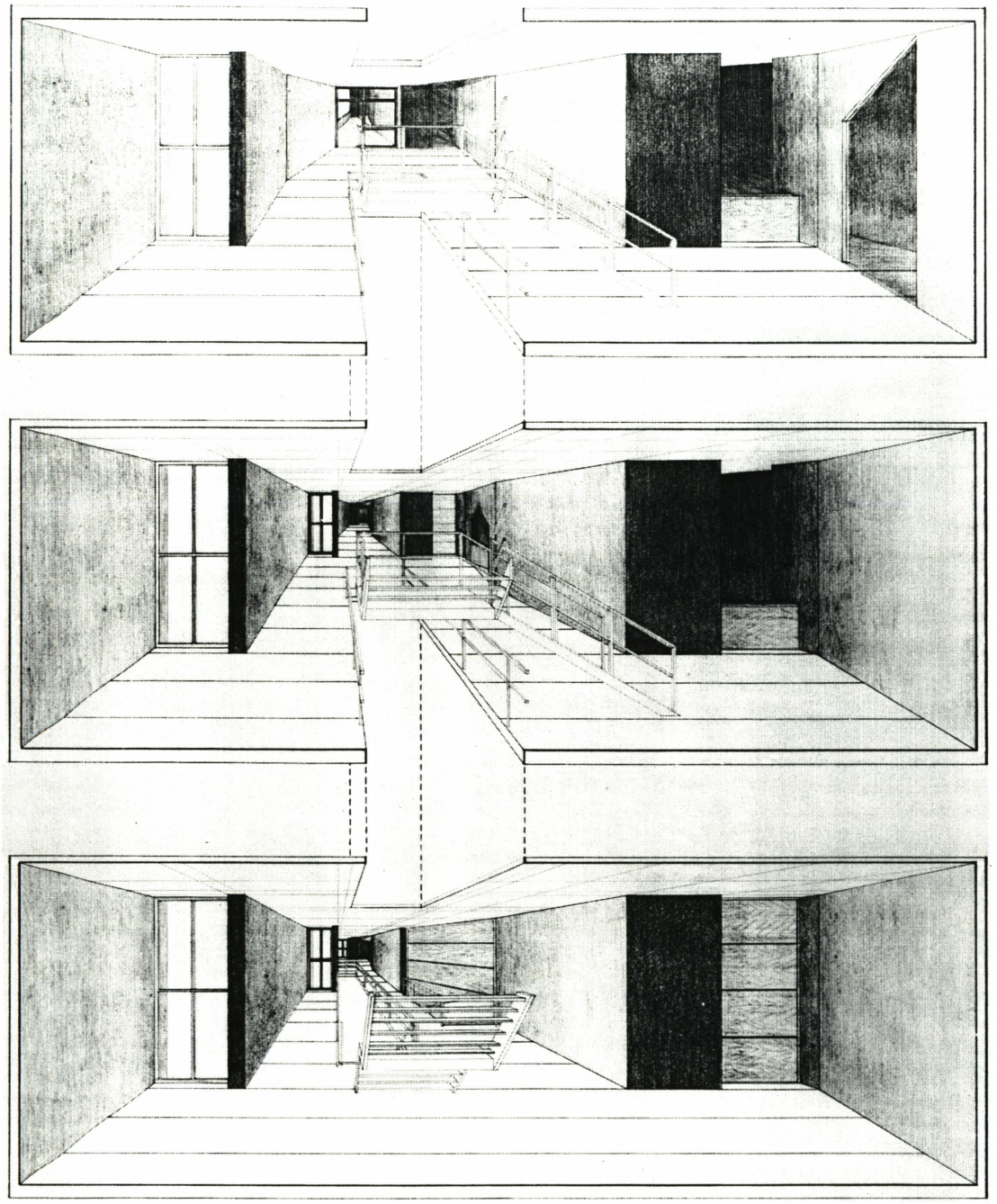


SENSE OF REALITY

Entry Foyer/Reception Space

The next section was crucial for my project as well as my thought process. To begin to think about the Concert Hall at a higher level of understanding was difficult in that I had never taken a project this far before and was unsure of how to approach ideas about a large project and integrate them on a smaller level, i.e., making the building a place rather than a shell. This desire to make a meaningful place comes about through a consistent awareness of details, the use of various materials, and an overall relationship of the parts to the whole at various levels and scale.

As mentioned earlier, the entry to the Concert Hall is a controlled approach with a slow descent into the building that allows the patron to view others as well as to be perceived by them, an important aspect of the performing arts. Crossing in front of the glass curtain wall one can see into the two storey entry/reception space before entering the building. The stairs inside the entry tower guide the patron through the first pier into the reception space either to the mezzanine or to the main entry on the third level. This space affords interaction with the performers whose lounge and dressing rooms are directly beneath, within the retaining wall mentioned earlier. Calling out the difference between the structural members vs. the wood infill panel system constantly reminds us of the importance of the solidity of



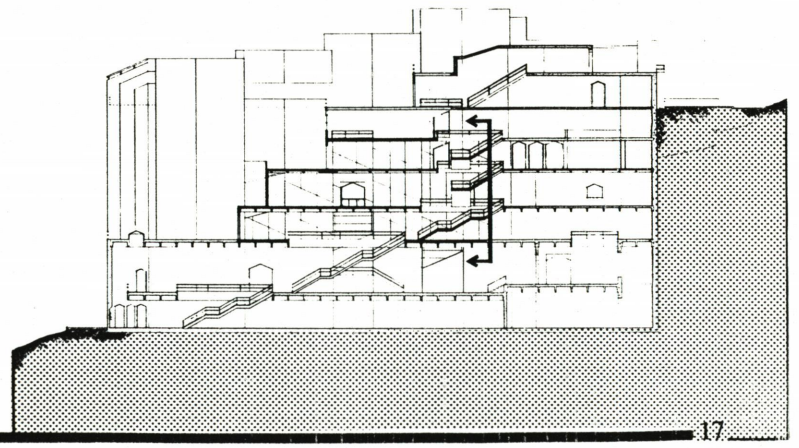
the piers, roof beams, retaining wall and towers.

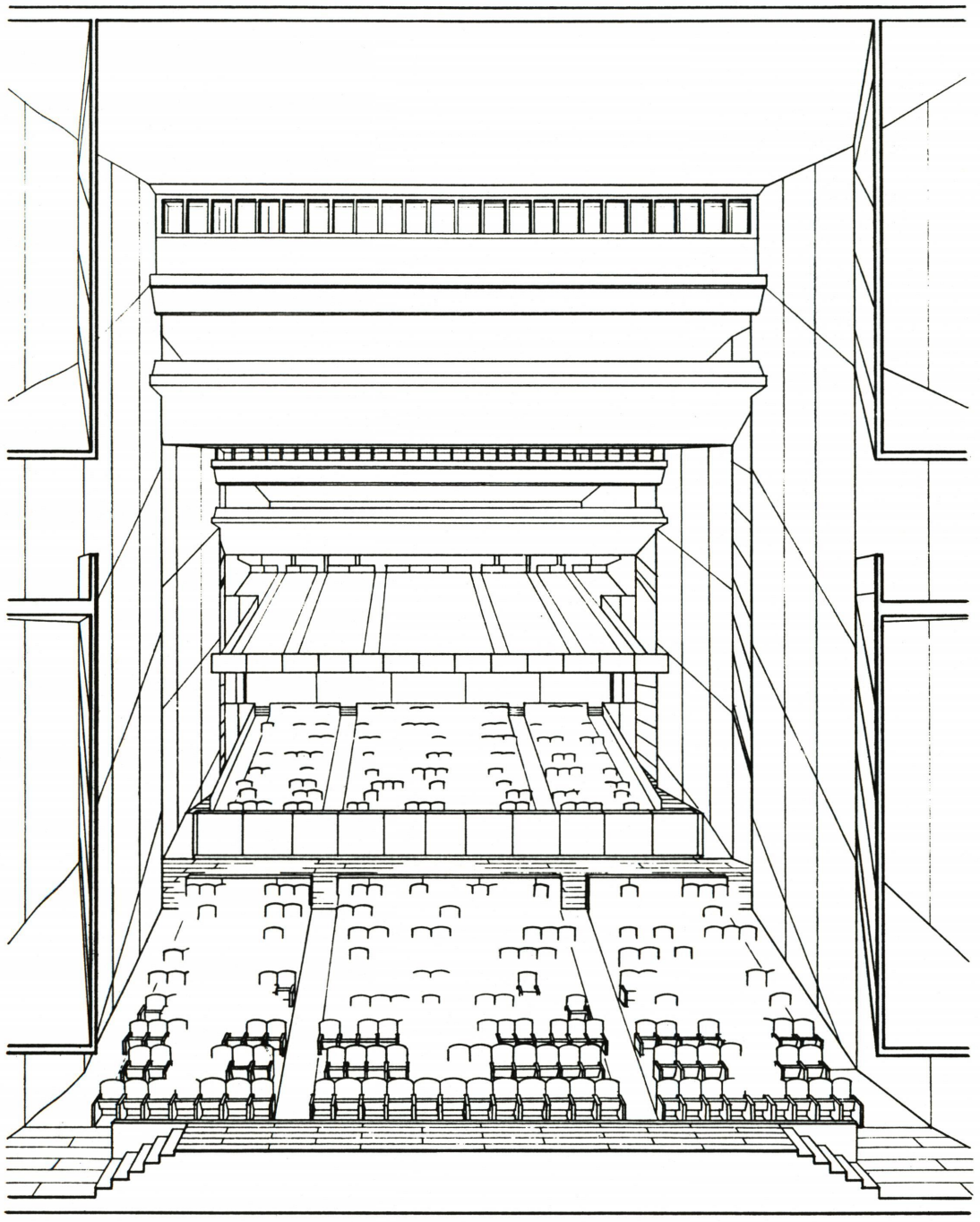
Circulation Spaces

The spaces between the piers and the outer walls are considered the circulation spaces in each of the eight levels on both sides of the hall. The levels shown are: the fourth - which is the entry level -, third and second which has access to the large terrace atop the base.

In respect to the piers, the circulation space must rely heavily on the implications of their continuity and massiveness. The best way to imply the piers is to show parts of other levels by opening the one storey spaces along the piers. In the upper levels the balconies allow an extended view of the piers on the exterior. The handling of the details presents an attitude that can reinforce the desired effect of articulating the individuality of the piers. One way of achieving this effect is by showing the depth of the pier itself (six feet) or changing the materials where a continuous wall could be used. A material such as wood has a more temporary nature than does concrete. By calling this out, allowing a slight reveal, or by pulling it away from a corner, will imply the notion that the wall continues behind the wood panels.

The ability to show contrast can separate and exaggerate conditions often overlooked. A hierarchy is established by showing the narrowness of the exterior walls and also through the expression of the differences between an exterior skin and a structural member. The variations of the way the support walls end is a subtle distinction that can



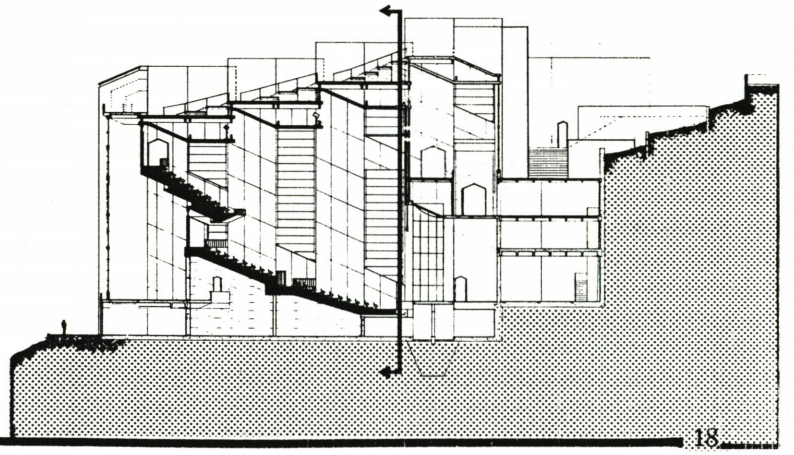


be overlooked. Yet, it reinforces the motion of the building as well as it helps respond to its specific conditions.

Auditorium Views

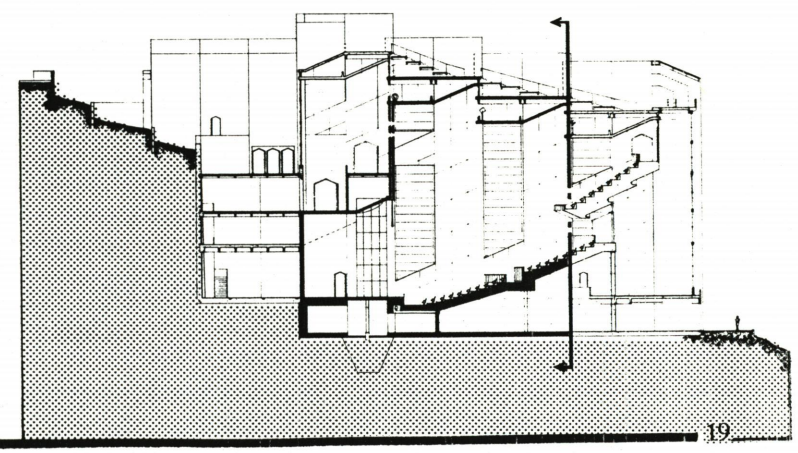
Having studied the Auditorium in plan and section, one expects the view from the stage and the view from beneath the balcony toward the stage to be similar. This does not hold true due to the fanning, converging, stepping and sloping of various members in different directions that can only be noticed given certain views. Looking from the stage, and although the seating area is dominant, the roof design is highly visible and the stepping of the slabs creates layers of space that provides narrow bands of light to highlight the underside of the slab. Beneath this area, lighting and sound booths fournish ample space for technicians and equipment. At the same time as the floor space slopes up toward the stepping roof, the walls do the same thing whereby the functional aspects of the hall are similar to the language established by the buildings order.

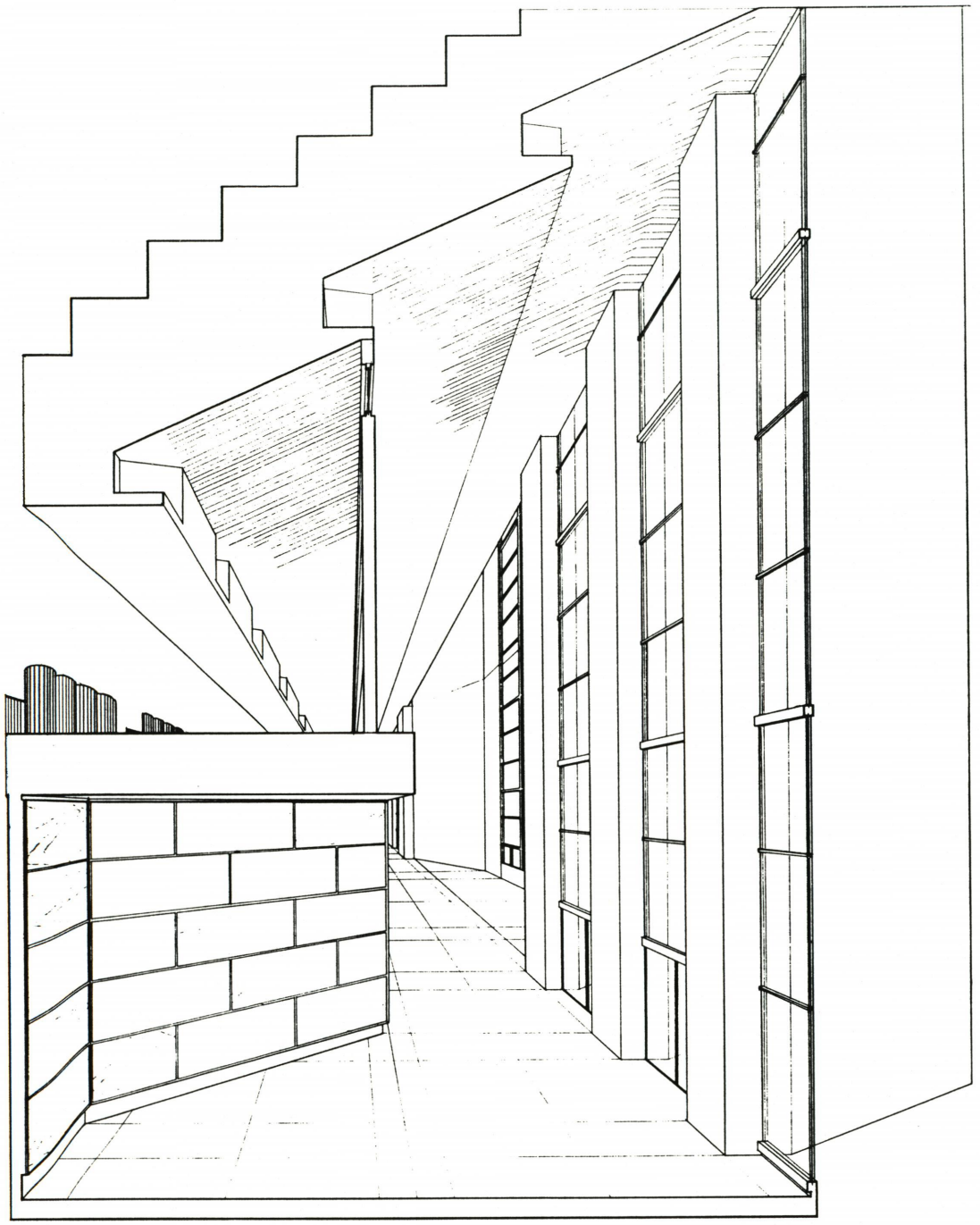
The openings in the infill walls allow for a sense of the piers rather than a continuous wall. The means to achieve this end is by using the entries to the hall, as well as two choir lofts adjacent to the stage.



Looking at the hall from the other direction, a more understandable view is obtained with the walls, floors, and roof as they all angle toward the stage as one would expect. The front wall bisects the lower portion for the performers, while the upper half utilizes the stage curtain by permitting the wall to have fenestrations in order to let some light pass through when the curtain is down and the wall is opaque or when the performance starts.

One can notice the effect of the use of the infill walls and how pulling the panels away from the corners enables a sense of the pier when they are seen together with the entries. As the perspective indicates, one can realize that many things are happening beyond one's sightlines. A reveal between the wall and roof plane is another subtle indicator of the height of the piers.

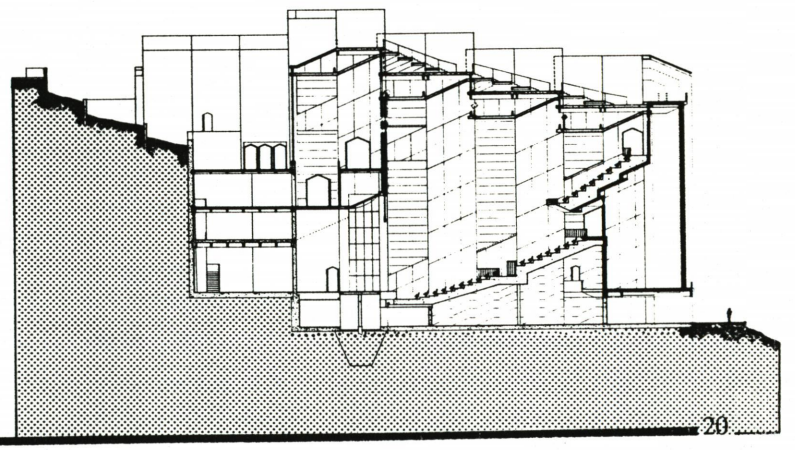


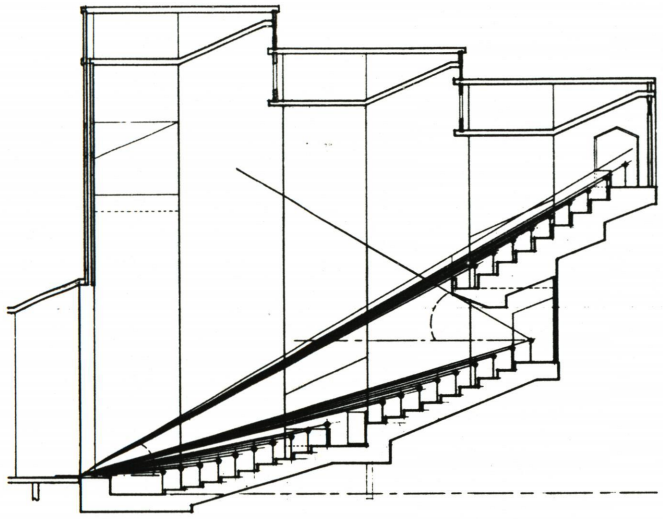


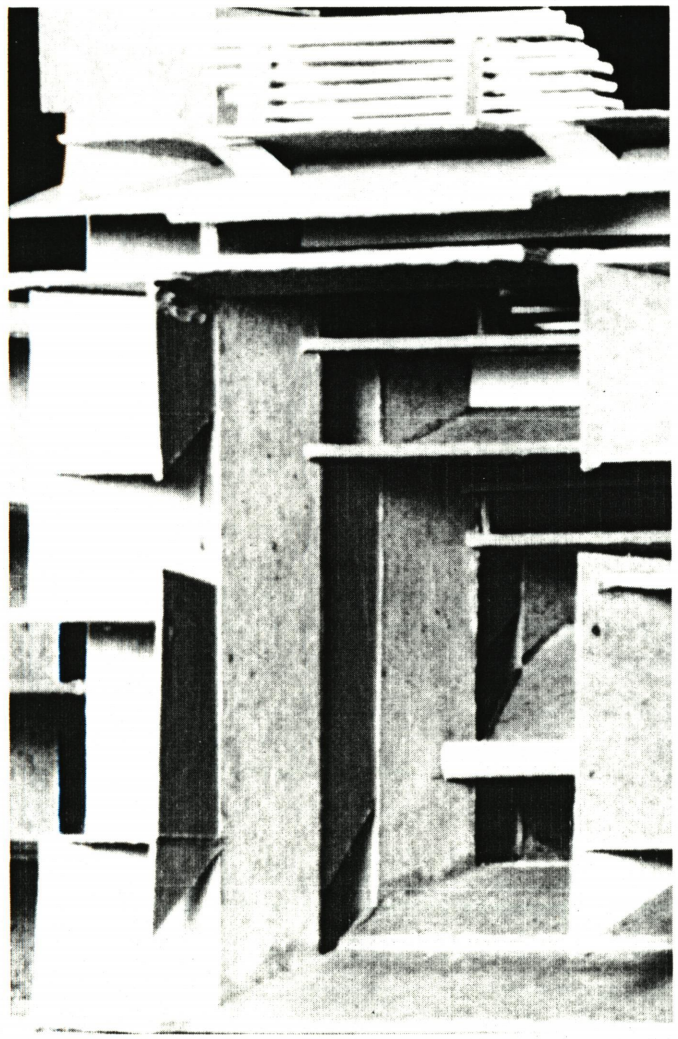
Intermission Space

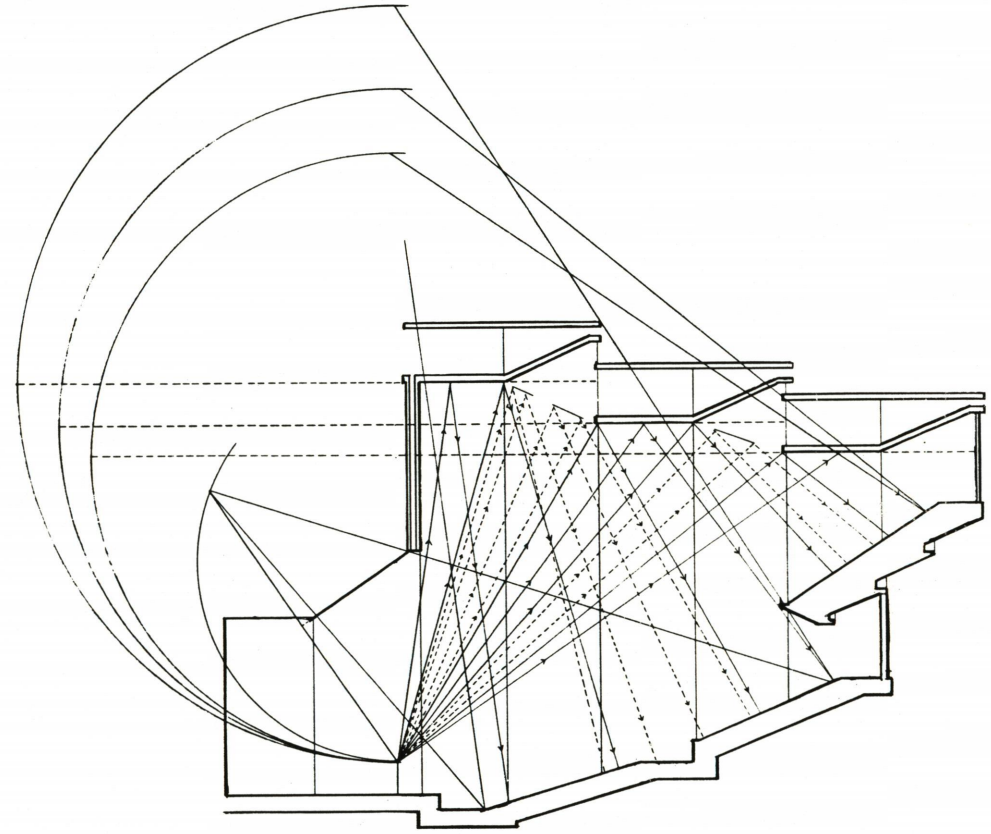
Entering from the circulation space on to the first level a gradual revelation of the total height of the hall is recalled. Upon entering through the last two piers the patron is gradually reintroduced, first to a niche, then into a two storey space (under the balcony) which steps up and is supported by a set of fins that visually reinforces the vertical element of the building. The central space becomes the final realization of a five storey glazed space whose proportions give an overwhelming vertical thrust to the cove.

Two sets of exits guide the patrons between the tall fins to stairs that lead to a landing. This landing space gathers everyone at a final flight of steps that complete the sequence of events, down the hill and through the concert hall. This implies returning to a park-like setting looking at the bridge and lake before taking the path to the parking area.









OBSERVATIONS

Technical Studies

The decisions made in the Concert Hall not only had to be consistent with the language of the design scheme but also should attempt to satisfy certain demands to make the building technically strong. Several studies and calculations have been excluded from this book so that the design as a whole could flow more smoothly.

The smaller section represented above (left corner) shows the sight line diagram that, at least initially, ensures a comfortable angle of vision for viewing, as well as head clearance to provide an uninterrupted view of the stage. This is also achieved by staggering the seats in each row so that the patron's view is between the shoulders of the people in front of him (page 10, seating).

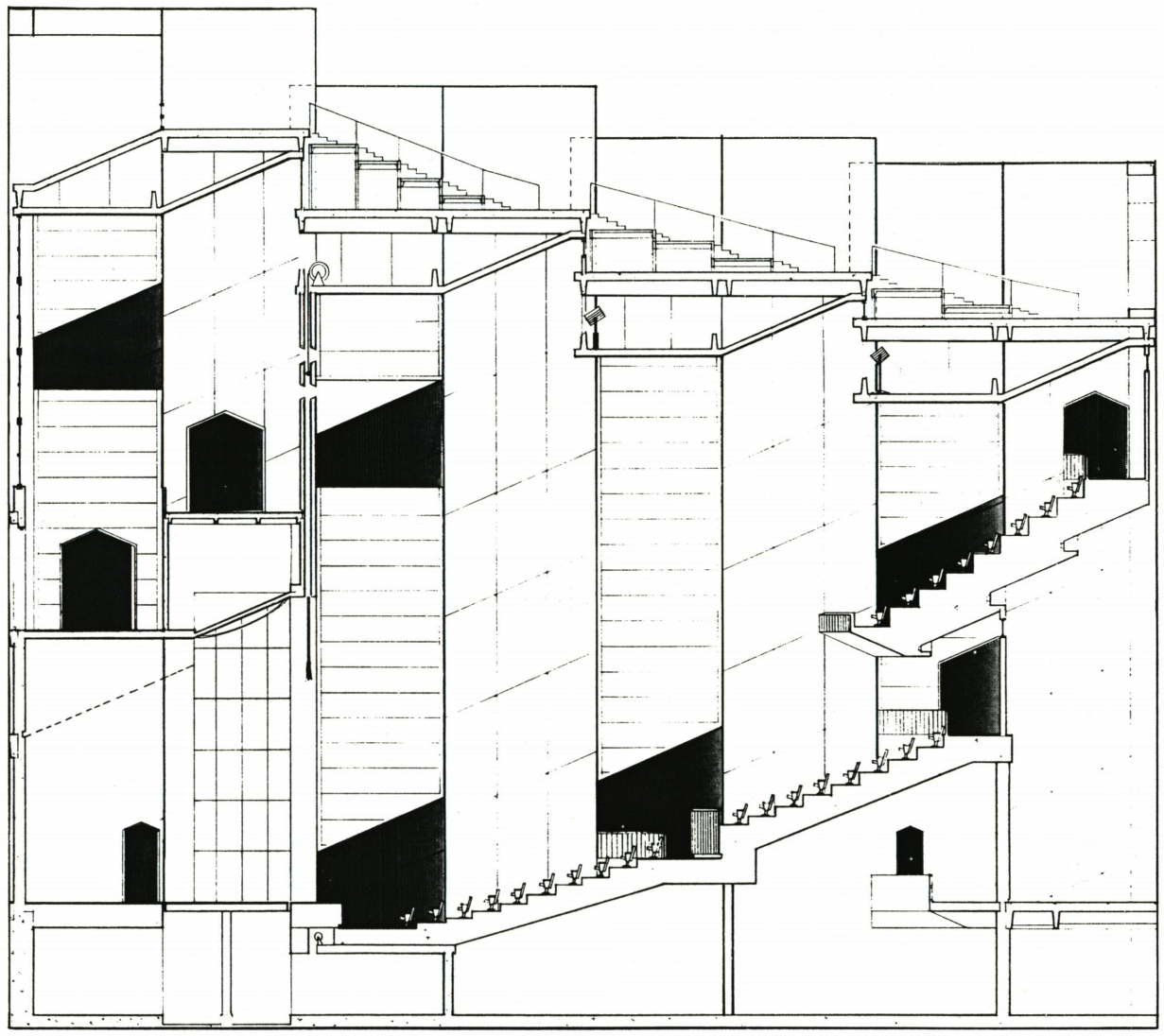
The acoustical considerations for the hall are intuitive as well as formulated and tested. As sound waves dissipate beyond a distance of one hundred feet, a desire to limit the Concert Hall length was reasonable. Sound fans out from a central point, so a desire to fan the seating area out also worked well with the site line studies. The main section above is a reflected ray diagram that shows how sound projected from the stage reflects off the ceiling equally throughout the hall so that no dead zones exist.

A Thought About Entry

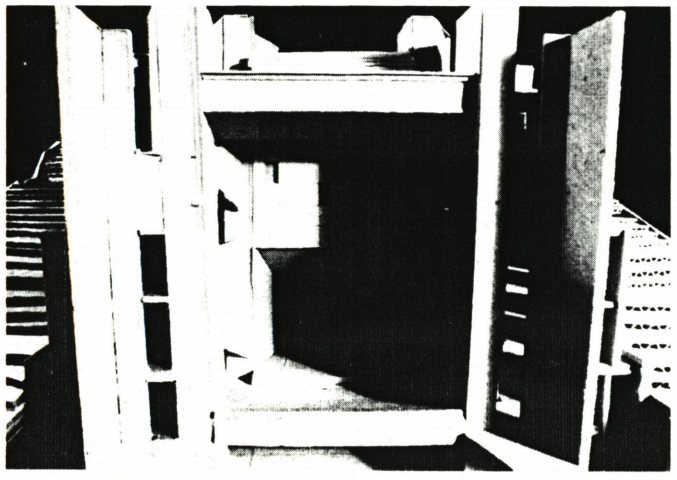
In the early phases of this project the ever present piers were derived through and interesting series of studies. Originally, a seemingly infinite number of parallel walls of various sizes defined the Concert Hall. This additive phase subsequently led to a subtractive study by taking a pair of walls that could incorporate spaces within them while simultaneously defining the Concert Hall. This massive wall had to be articulated or carved into my initial approach: the use of the idea of entry as transition of scale and openings as thresholds. The result was based on this study of entries. The walls became piers with the entries, now a minor element.

This realization came about by understanding visually an unplanned result that enabled the individuality of the piers to be sensed despite the infill walls. Without these entries other details would not be powerful enough to affect the perception of the hall at a higher level of understanding.

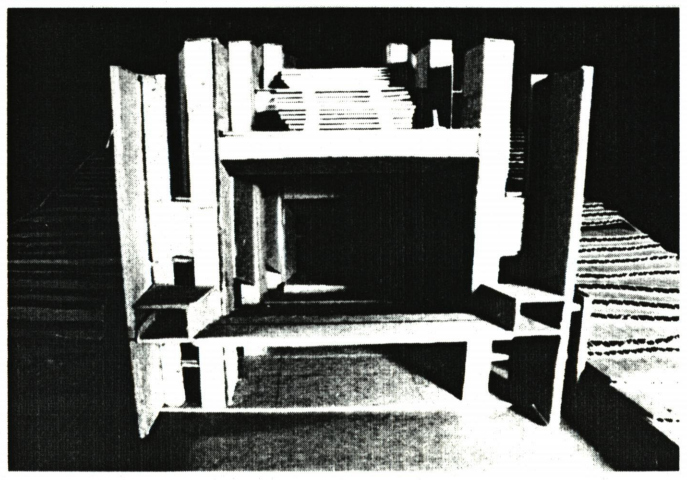
The photographs show three dimensionally, if not realistically, how the rhythm of the piers on the exterior of the building is reinterpreted with infill walls rather than a void, like on the exterior, in order to convey the same continuity through opposite means.



Concert Hall section focusing on the importance of the entries as a design force.



Changing rhythms of the exterior walls as well as the proportions of the section cuts due to the movements of the walls and roofing members.(23)



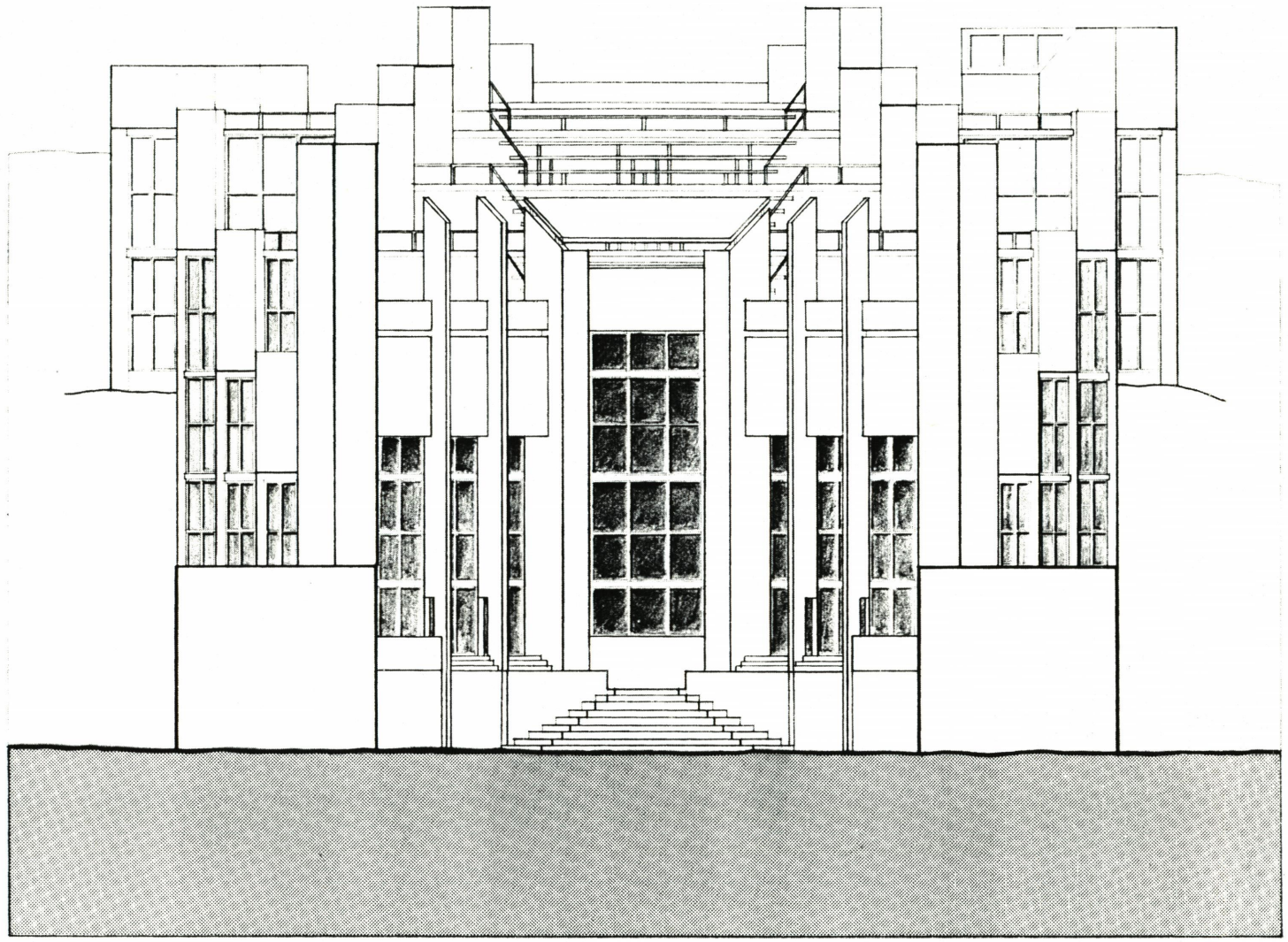
Computer generated photograph of the site with a simulation of the Concert Hall.(24)

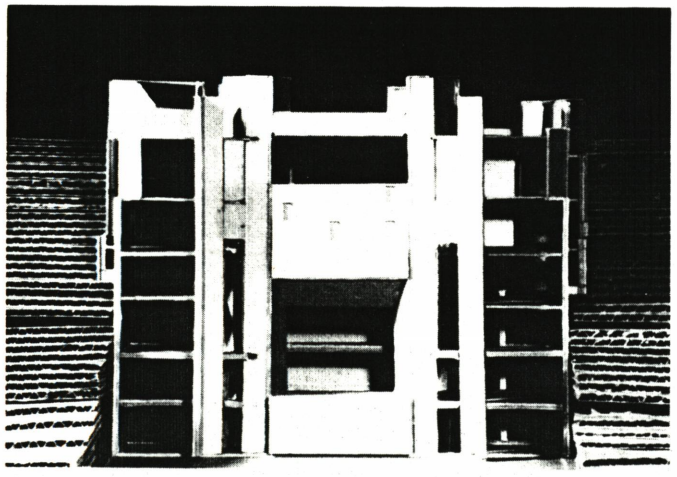
Rhythms of Solids and Voids

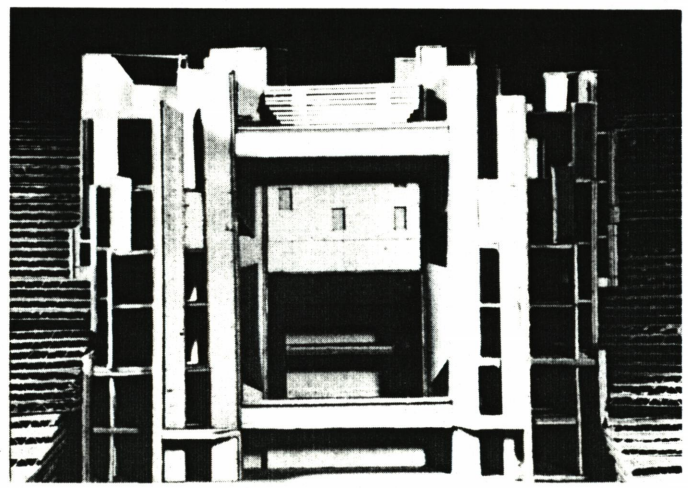
The images on this page show the results of having an order that, through derivation and application at different levels (rank on a scale), establish a language that allows unplanned coincidences to strengthen the whole.

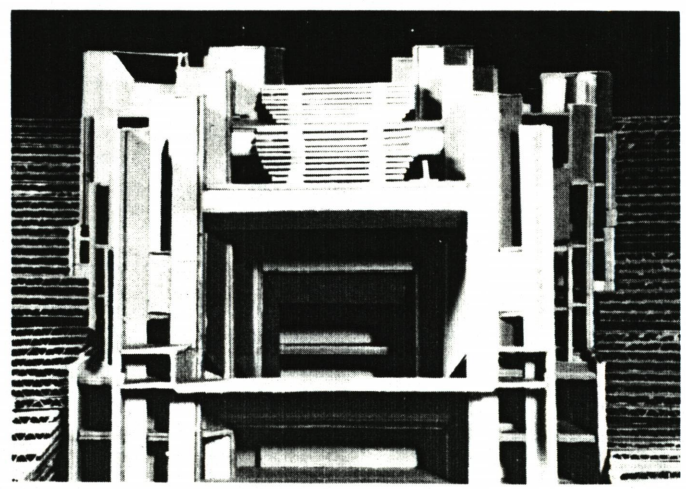
The intended purpose of these illustrations was to inform the reader on movement of the exterior walls toward the columns with a rhythm coming from the stepping effect, the angled walls and the window locations. Simultaneously another transition occurred through the internal order of the building rather than through an intended forced action: the transition of the building in section of the hall at the various piers from a tall narrow space at the first bay to an approximate square dimension at the second bay and to a horizontal rectangular form at the third bay. The fourth bay is the facade which seems to superimpose the afore mentioned proportions onto one facade as derived from a totally different issue addressing the piers and the resolution of the amphitheater. Through this language a consistency enables things unknown to be resolved in an organic fashion. This can be refined throughout a career that sincere exploration and a personal architecture can strengthen and grow from within a common language.

This section attempted to convey my sense of reality for this Concert Hall. It seems only fitting that the last image given to the reader should try to give a lasting impression of what could be. Ultimately the desires and thoughts that stem from this project should be used as a foundation for a career of clarifying and refining thoughts on form, both as an individual statement and as part of the larger statement of a people and their culture at this time.









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These books were resources
for me throughout my stay at
Virginia Tech and influenced
my thoughts about Architecture.

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