

Water Rites: A City Stage For Boston

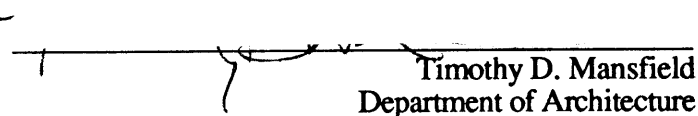
by
Timothy Denton Mansfield

Bachelor of Arts
Wesleyan University, Middletown, Connecticut. 1983

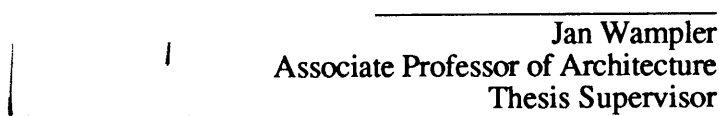
Submitted to the Department of Architecture in partial fulfillment of the requirements of the degree **Master of Architecture** at the Massachusetts Institute of Technology

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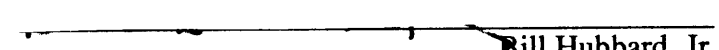
Signature of Author


Timothy D. Mansfield
Department of Architecture
May 11, 1990

Certified by


Jan Wampler
Associate Professor of Architecture
Thesis Supervisor

Accepted by

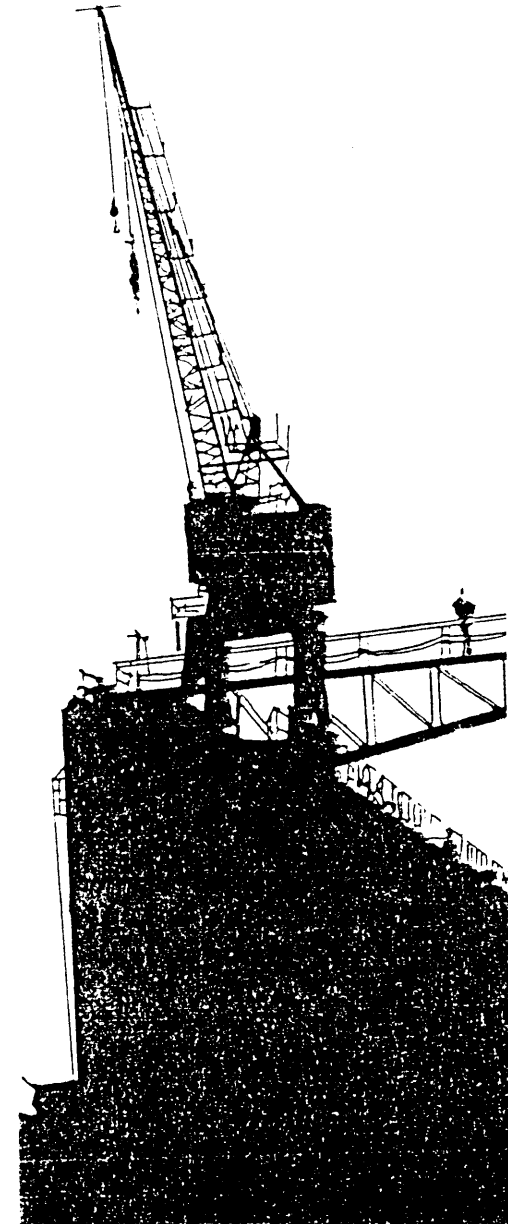

Bill Hubbard, Jr.
Chairman, Departmental
Committee for Graduate Students

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Abstract

This thesis focuses on the design of a public theatre for the entire city of Boston, a "city stage." The intention is to explore through design the boundaries of an architectural setting for large scale performance art; one that could be enjoyed by the entire city at once. Further, the idea is to provide an architecture that supports the kinds of performance that might heighten not only the experience of what is conventionally known as "theatre", but would also transform our sense of scale in terms of the audience / performer relationship.

In another sense, the theatre would serve as a focal point - a "public common" - in a harbor that has been sorely neglected. Today, Boston is in a rare position to reclaim its waterfront. Projects like the depression of the Central Artery and the harbor clean-up are opportunities to positively impact the waterfront environment. The "city stage" might serve as a beacon for the harbor and a place to enjoy what was once a forbidding edge.

Thesis Advisor: Jan Wampler

Title: Associate Professor of Architecture

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I would like to acknowledge some people who were instrumental in the completion of this work.

To the spring thesis group, especially Tim, Bill, Joe and Craig for timely crits and keeping things in perspective.

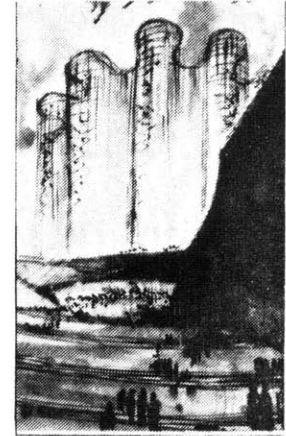
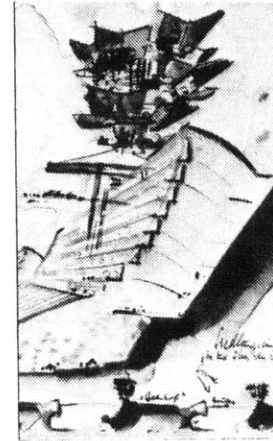
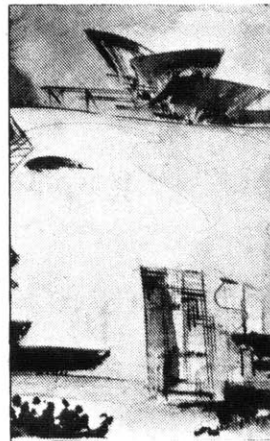
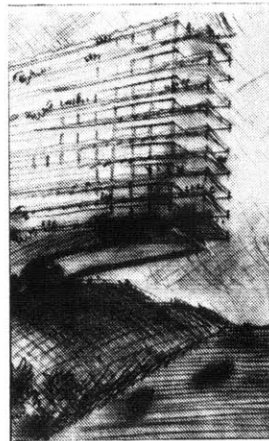
To the Blue Diner Breakfast Club, great conversations and a welcome escape.

To Jan Wampler for his inspiration, friendship, and support throughout my studies at M.I.T.

To my family for their undying love and support all these years.

And most importantly Kathryn, to whom this thesis is dedicated.
I love you, Kat.

Preface



For 400 years every connection between the auditorium and the stage stopped at the proscenium, as if it were the boundary line between two different worlds that must on no account be overstepped. On one side was the world of the theatre, mysterious, esoteric, hinting at obscure and secret doings; and on the other, the world of the audience, the secular lord, the simple citizen, the customer, the consumer.¹

This thesis is a design exploration for a new theatre type, one that challenges the conventional notions of a theatrical experience. Over time, the principle concepts of theatre - specifically the relationship of audience to performer - have remained virtually unchanged. Indeed technological developments have made the mechanical functions of performance easier (e.g. computerized lightboards etc.) But these advances have influenced only the pragmatic function of elaborate settings; essentially, they have not heightened the experience of theatre beyond what we already understand in the traditionally passive spectator / performer relationship.

Since high school I have been involved in theatre both as an actor and as a set designer. I am interested in challenging the traditional roles of theatre, allowing for a blurring of the definition between the audience and the performer. Historically, the move from the classical proscenium stage to the theatre-in-the-round was a process of bringing the actor

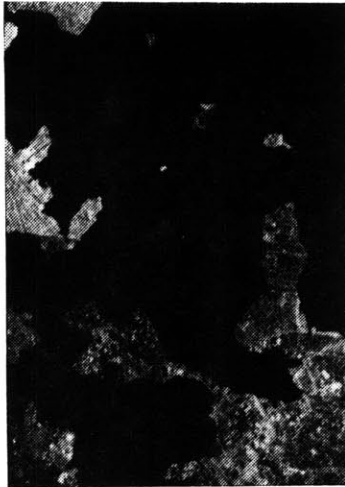


through the "fourth wall" into the world of the audience; it began to dissolve the barrier between the two. I believe this transformation can be taken a step further by increasing the scale of the performance to such a magnitude that the physical identification of audience to actor - conventionally human to human - is altered, transforming the spectators awareness of the theatrical experience to that of human to environment.

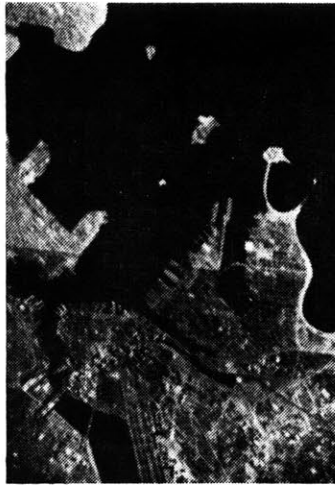
This thesis, then, begins with some background on the Boston waterfront, the site of the proposed theatre. It is then divided into two parts. The first will make some observations of the theatre. The second will present the design and its process.

Theatre of Epidaurus

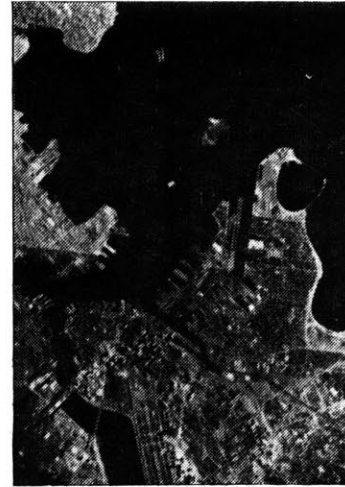
Introduction



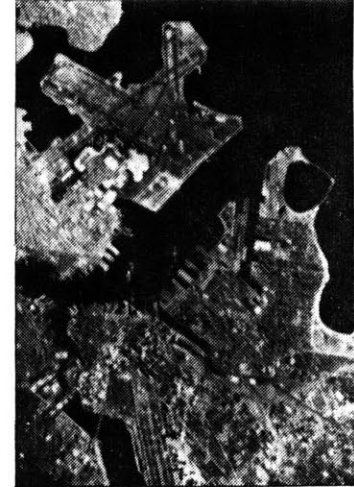
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1830



1895

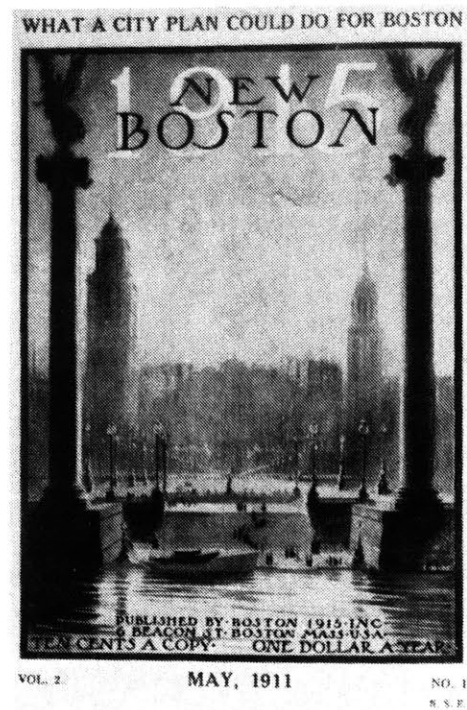


1985

Boston Harbor:
Configuration of land during four periods

Upon taking the mayor's office in 1823, Josiah Quincy's highest priority was to rebuild the town dock. His efforts produced the markets that bear his name. More than half a century later, one of the Boston Redevelopment Authority's (B.R.A.) planning initiatives was Harborpark; "[a] planning program for the balanced and continued revitalization of Boston's waterfront."²

The waterfront and its design has always been a concern for the city. During the eighteenth and nineteenth centuries, piers, markets and wharves formed what Walter Muir Whitehill called the "avenue to Boston from the part of the world that really mattered."³ Well into the twentieth century ambitious schemes for the enlargement of port facilities had the attention of the municipal authorities, initiating landfill ventures. Recently though, the B.R.A.'s mission is quite different. A shrinking port, abandoned maritime infrastructure and polluted waters are foremost among the challenges. Equally ominous are the increasing development pressures which are slowly making private property of what should remain public domain. A key component in the B.R.A.'s mission is the establishment of standards for maintaining and enhancing public access to the water's edge.

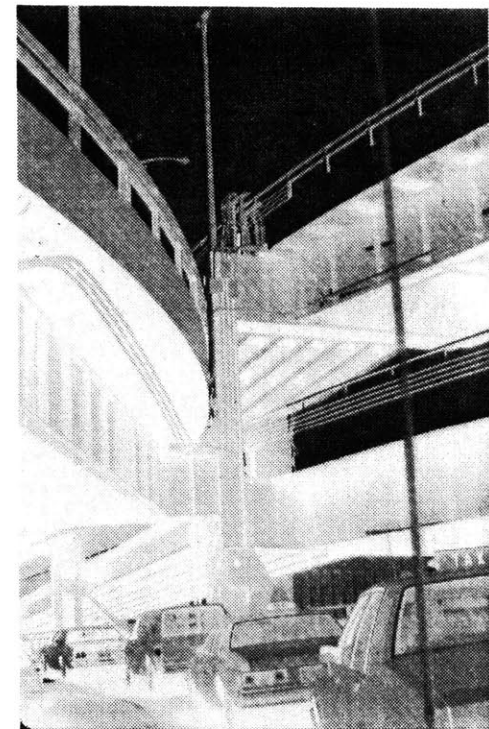


Cover of *New Boston* - 1915, May 1911. View of new gateway to harbor. This might be the first conceptualization of the "Walk to the Sea."

Boston has, historically, maintained the notion of a "walk to the sea." It begins at the state house, continues down Beacon Hill, passes City Hall through Quincy market and then finally meets the harbor's shore. There is, however, an unfortunate problem with this journey: The elevated Central Artery which travels north to south along the city's edge. In one bold and ugly move, city engineers severed downtown Boston from what was once its life blood. The harbor was effectively cut off from the city both physically and conceptually

This concept of broken fabric occurs in other parts of the city as well. East Boston was similarly ripped apart with the two harbor tunnels. Although the tunnels physically connected Downtown to Eastie, in the minds of the East Boston residents, it destroyed the heart of the neighborhood and created an impenetrable psychological barrier. East Boston's waterfront, like much of Boston Harbor's shoreline, is made up of abandoned shipyards, essentially ruins of more prosperous times. Inland, the old Conrail corridor, which used to serve the shipping industry, is now a vacant swath of land left for burned out cars.

Despite this grim picture of decay, steps are currently being undertaken to rectify at least some of the damage. The depression of the Central Artery and the extensive focus on harbor clean-up show healthy

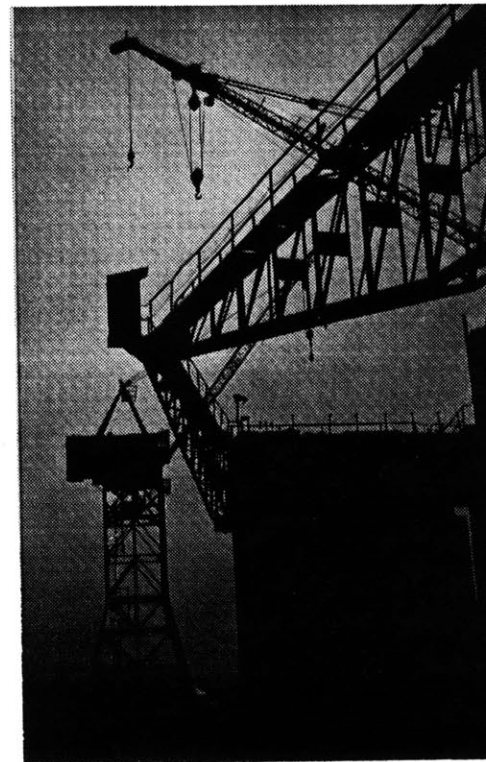


Central Artery, 1990

signs of change for the waterfront environment. For East Boston, there are also glimmers of revitalization. A small shipyard just off Marginal Street, is still operating in a limited capacity. It used to be part of the old Bethlehem Steel Company. Its floating drydock which sunk years ago has been salvaged and is now under major repair. Given the state of the shipping industry, however, the shipyard needs to lease or develop the rest of its property. The shipyard's owners have, therefore, welcomed recent interest in the site from various business sectors.

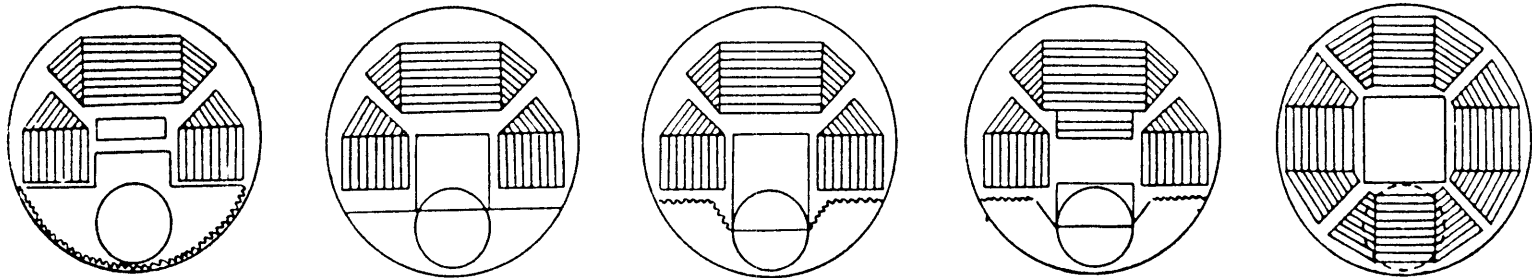
For many reasons the marginal street yard is the site of this thesis. The yard is filled with large steel warehouses, shipping cranes and parts of machinery that lend a techtonic atmosphere. The structural quality of the cranes especially give the site a richness of articulation which begins to suggest an exciting architectural vocabulary.

On a larger scale this particular site presents an opportunity to reconnect East Boston to the water. An M.I.T. Urban Design study proposed a transformation of the old railroad corridor into an urban greenspace that would reach the shipping piers at the waters edge. Further because the Bethlehem Steel site is on axis across the water with the "walk to the sea" creates a possibility to symbolically strengthen the tie of East Boston to the city, and allows the site to serve as a beacon for the entrance to the harbor.



The Marginal Street shipyard

Part One



University Of Miami's Experimental Theatre:
alternative stage positions

The playwright Arthur Miller started it all on the first morning: Why could he not write the kind of plays he wanted to write without the encumbrances he found in Broadway theatres, which since 1905 had not changed except in the relocation of the footlights onto the first balcony.⁴

This quote evokes some interesting questions. Have our playwrights and performers reached the limit of their artistic expression? Are there too many "encumbrances" today limiting the freedom to explore? From Miller's standpoint this seems to be the case. Architect Pietro Belluschi agrees:

It has become increasingly clear...that the existing theatre houses impose severe physical and artistic limitations on all types of performing arts by the inadequacy of their design.⁵

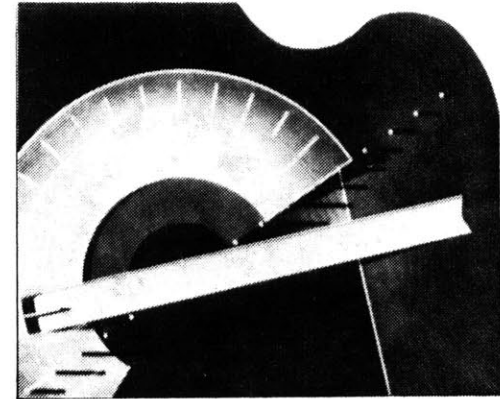
Certainly there have been vast developments in the areas of stage technology, computerized lighting and perhaps architecture. But conceptually, the experience of audience and performer has remained virtually unchanged since antiquity. The reason might be that theatre people - everyone concerned with the stage, including the audience - find it quite difficult to detach themselves from the rich theatrical traditional. The old is not easily ousted by the new.

George Izenour, a leading authority in theatre technology, has a more pragmatic view than do Miller and Belluschi

I believe that theatre architecture is still in its infancy. If one reflects on the various achievements of modern science, then one realizes how trifling an accomplishment it is to be able to rotate a stage, to raise and lower a ceiling, to change the arrangement of seats in a theatre by pushing a button. I believe the deterrent lies only in the cost and the time required for amortization of the needed funds. When people manage to overcome this financial barrier, we will see a real transformation of the theatre.⁶

Unfortunately, as with many things, progress in theatre is closely tied with money. People today are simply hesitant to fund experimentation in the arts. They prefer to rely on materials and techniques which have stood the test of time.

However, there have been a few moments in the modern history of the stage where tradition has been challenged. In the 1920s the Bauhaus school was fertile ground for discovery. Its principal aims were to pursue the union of the artistic ideal with practical craftsmanship and to understand in

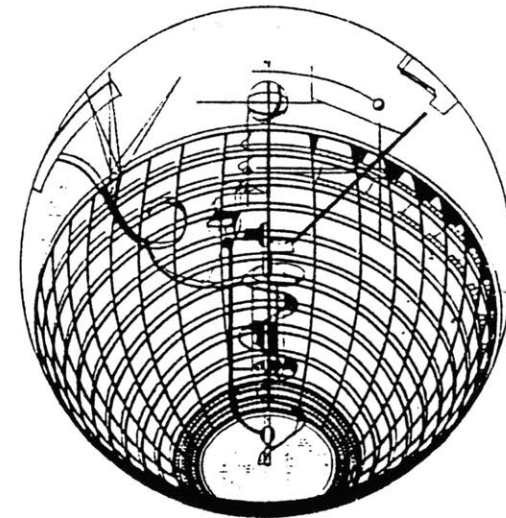


Theatre on the Water, Hokkaido Tadao Ando

all its ramifications the essence of *der Bau*, of creative construction. This naturally had valid applications in the field of theatre. It was understood that the stage was not a self contained element but an orchestrated complex achieved only through cooperation of many different forces.⁷

One of the theories that emerged from the Bauhaus was Oskar Schlemmer's creation of a "space theatre," a theatre divorced from the patterns of the past. The three dimensional actor, assisted by every theory and technological medium, breaks free of the "Italian box" or proscenium to approach and identify with the spectator. Andreas Weinger, a student of the Bauhaus, provided a visualization of this theory in his design for the "spherical theatre." Weinger used a sphere as an architectural shell. By placing the spectators on the inner wall of the sphere, he gave them a new relation to the space. The entire structure revolved around an axis supporting the stage, which was free in space. As a result the audience was placed in a new physical, optical and accoustical relationship to the action.

At the time, of course, the spherical theatre was no more than an hypothesis. The hope was that it might be realized when technology reached a sufficient level of advancement. It would be realistic to say that such a design could, in fact, be built today. A similar project of a much smaller scope, is Renzo Piano's music hall constructed inside Saint Lorenzo



Weinger's "Space Theatre"

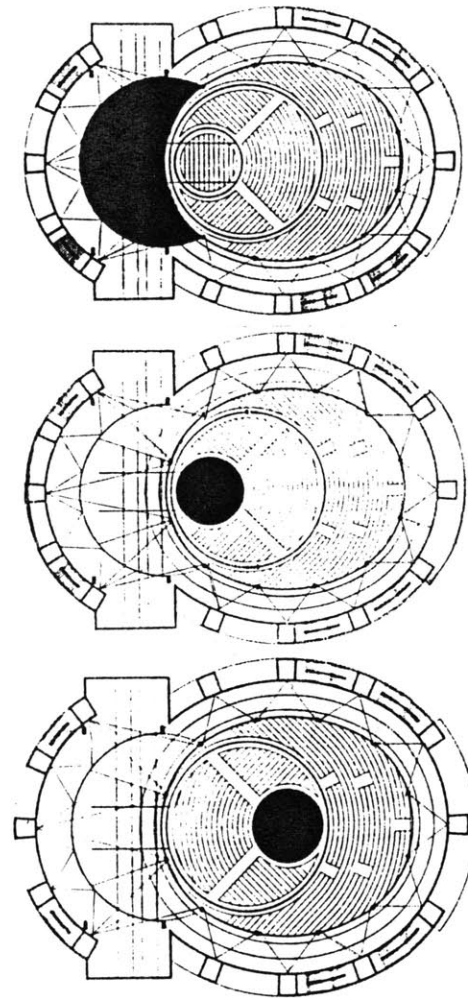
Gropius' "Total Theatre"

Church in Venice. The audience sits in the middle of the structure while the players move about freely both vertically and horizontally. It is as if the audience experiences the music in a vastly scaled up instrument. Despite our technology, however, the cost of Weininger's structure today, to recall Izenour, would be astronomical. The irony is that even though the spherical theatre would be technically feasible, people's interest would not be sufficiently keen to permit financing such a costly venture.

The Bauhaus also gave us Walter Gropius' machine-like *Total Theatre*. A more conservative design than the sphere, but one one that served and still serves as a model for every architectural researcher concerned with contemporary theatre design.

In my Total theatre....I have tried to create an instrument so flexible that a director can employ any one of three stage forms by the use of simple, ingenious mechanisms. The expenditure for such an interchangeable stage mechanism would be fully compensated for by the diversity of purposes to which a building would lend itself.⁸

Gropius was a good salesman, recognizing then that money was the key to completing this project. Aside from fiscal matters, the design was a fine



example of theatre architecture in which technology, science and art converge to provide a solution for a flexible and adaptable space. The Total Theatre's elements are convention nowadays, but for its time the design was a breakthrough. Unfortunately for Gropius it wasn't lack of money that stopped the project but rather the outbreak of a world war.

The twentieth century has seen few of these creative bursts of energy in the world of theatre design. Certainly none as powerful or as rich as Germany in the Twenties and Thirties. Some of the Bauhaus work was never fully realized but the impact it had on the theatre was significant and remains a source of inspiration even today. However, in comparison to advancements that have been made since then in other modern movements, I would argue that architecture for the theatre has not progressed nearly enough.

In the world of modern dance, for example, figures such as Merce Cunningham and Tricia Brown have had enormous impact, pioneering in all directions of dance and movement. Performance artist Chris Hardman in San Francisco has experimented in mixed media, thoroughly challenging the audience's role. The artist Christo transforms the environment with gigantic installations which in a sense allows us a chance to observe life in a new perspective. But these are all examples of artists who have made



Christo's "Running Fence"

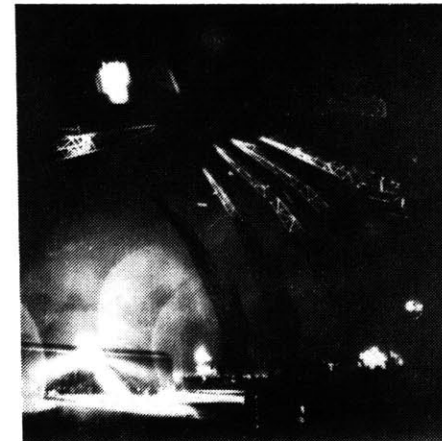
enormous strides in spite of architecture. They work within a built environment that has changed little over time. What might these artists achieve if they were given an architectural setting that supported, even inspired their explorations? A flexible space that could technically support a variety of performances and at any scale.

With this notion in mind, the focus of this thesis is the design of a theatre for large scale performances; a stage for the city of Boston. The site occupies part of the old Bethlehem Steel yard along the harbor's edge in East Boston. As mentioned in the introduction, I was taken by the site's tectonic qualities. The soaring trusses, cables and machinery all brought to mind images of a dynamic setting for theatre. There is something invigorating about exposed structure and I agree with Frank Gehry when he observes that a building is more interesting with its framing exposed. There are two long piers that reach out into the water which could serve as a stage and access for the cranes by rail. Two existing warehouses remain as a backdrop for the theatre.

The program would include the necessities of theatres: a lobby, box office, cafe / bar, administrative and development offices, rehearsal space, scene shop, public facilities and the theatre itself. The theatre would seat

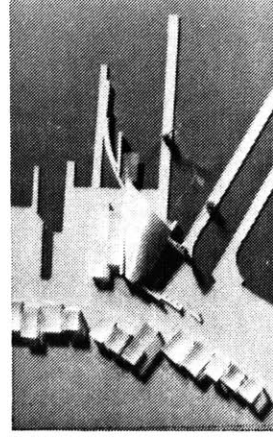
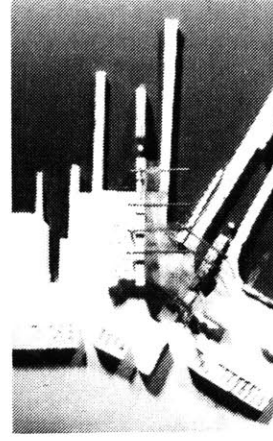
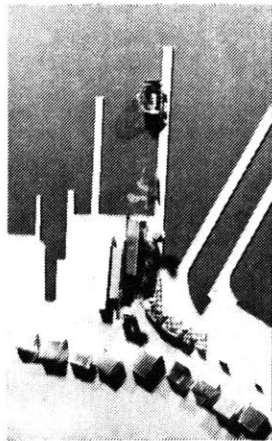
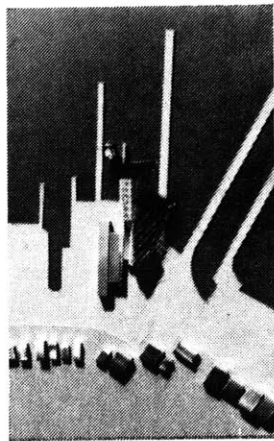
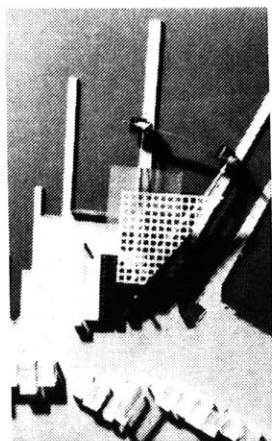
approximately 4,000 spectators, but in fact the idea is that the entire city could be a spectator / performer along the waterfront. The theatre would promote diverse kinds of large performances; giant kinetic sculptures, elaborate laser shows and multi-media extravaganzas. In effect the theatre becomes a stage for the city. The scale of the performances would allow one to enjoy the show from virtually all parts of the city along the waterfront.

One particular performance that caught my interest when I was in the Netherlands was a work titled "Bending Iron" by the Dutch artist Barbara Van Loon. In the performance, shipping cranes on the Azie Pier in Amsterdam harbor assume roles in a ballet, develop into living beings and start to dance. Using the cranes, Van Loon choreographed an entire piece with music and lights. In a sense, they became animals on their own territory. The cranes, two hundred feet hulking masses of steel, moved with grace and poetry. During the dance, scale was suspended for the spectator. It was not hard to imagine ourselves as the cranes even though we were supposed to be the "audience." Watching them sway, the sense of oneself in space was heightened and for a brief moment we were the looming cranes. It is just such an experience I want to capture in a permanent architectural setting in Boston harbor.



"Bending Iron"
Barbara Van Loon

Part Two



The Design Process

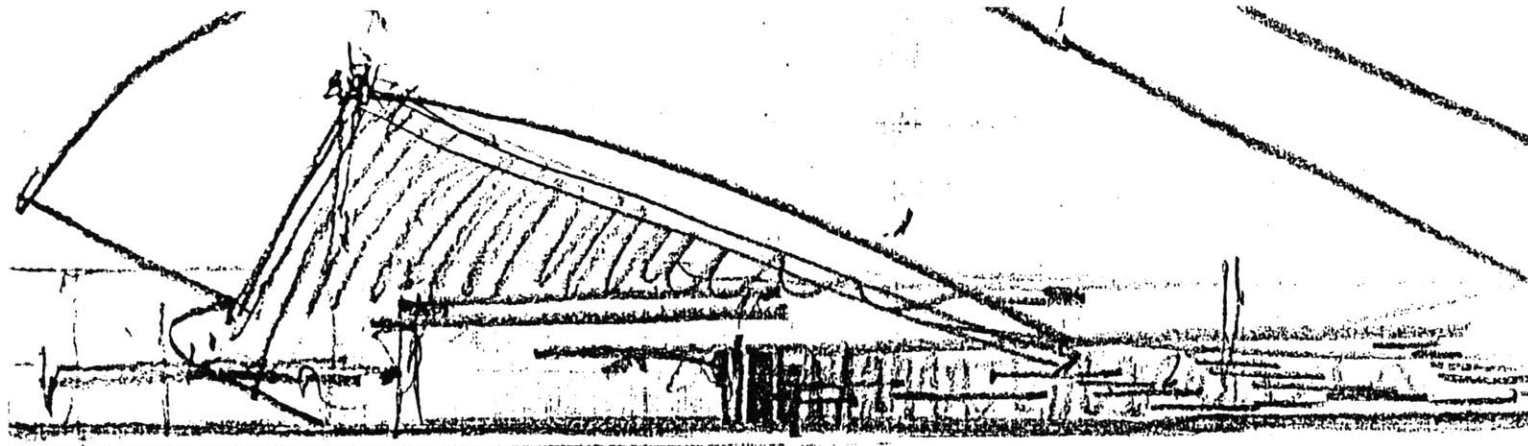
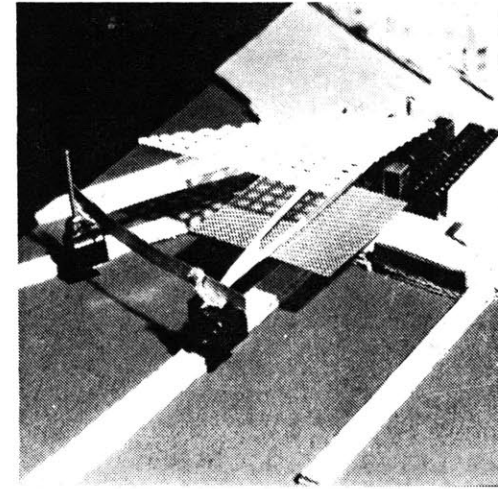
The following is documentation of the design process which consisted of a series of model iterations. Each exploration focused on one or two concepts in an attempt to gain a deeper understanding of the site and the design problem. This was a new way of working for me, but allowed a certain freedom to experiment a variety of design directions. The unedited notes accompanying each model were written immediately following its completion. The models are not necessarily sequential, although some themes do appear more than once. I relied primarily on model making, though some sketching was used in order to examine an idea more closely.

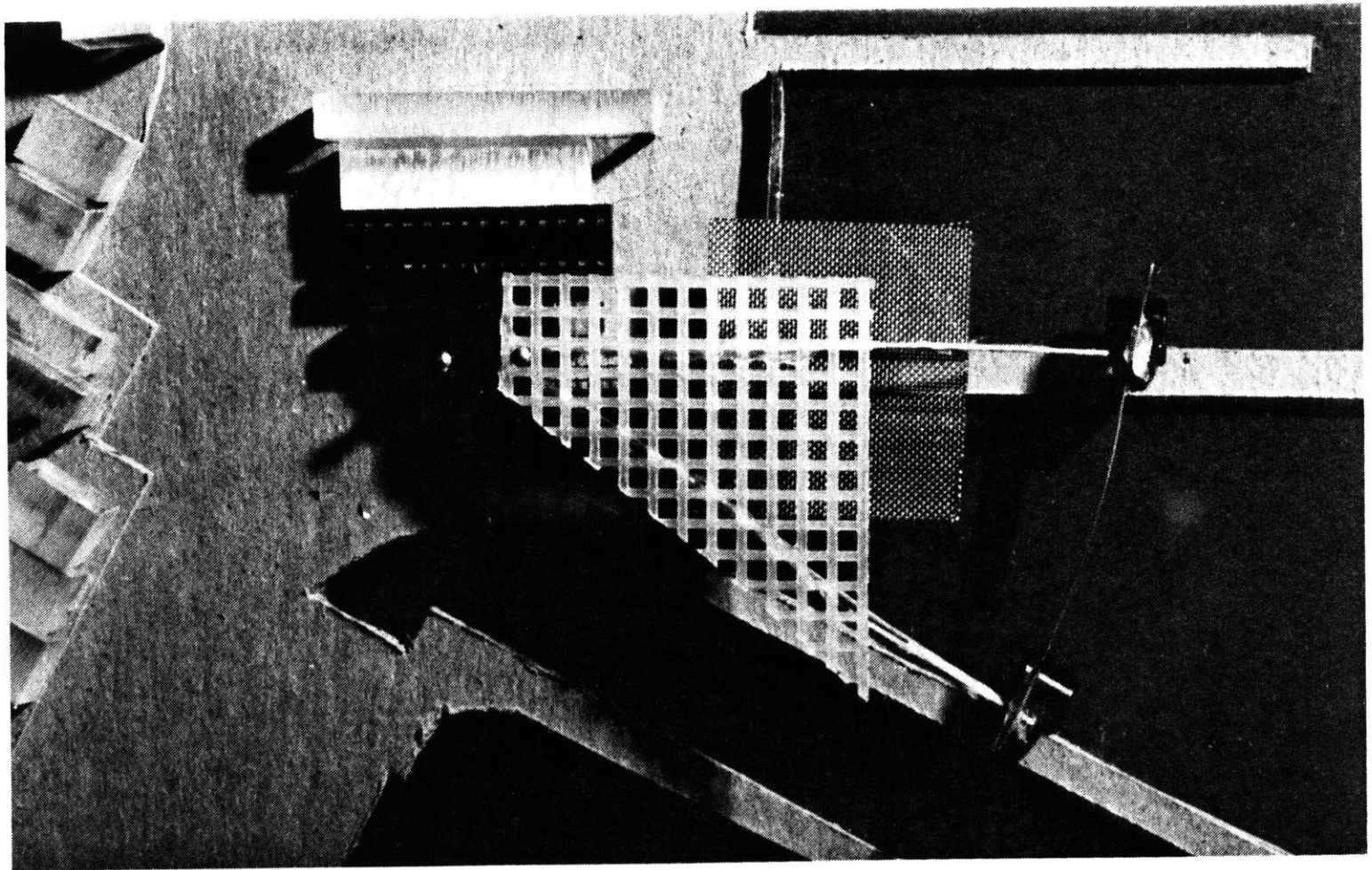


Model #1: February, 14, 1990

Scale: 1" : 200'

...set out with this model to explore the vastness of the site. A little indifferent to actual scale. Wanted to see the nature of moving from the land out onto the piers - sprawling spans, sheets of covering. It's as if the building leaps out of its shell and pounces on the piers. Maybe a little flashy, but I think conceptually embraces the nature of the site with regards to the scale of the piers and the notion of reaching for the city. It seems to take on a sense of a looming calm. A tension similar to the moments just before a performance. The house lights dim, voices are hushed.



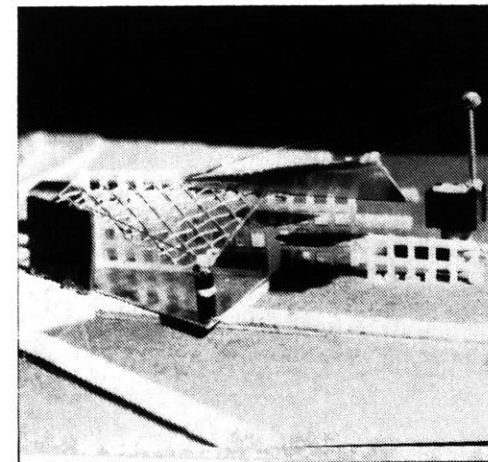
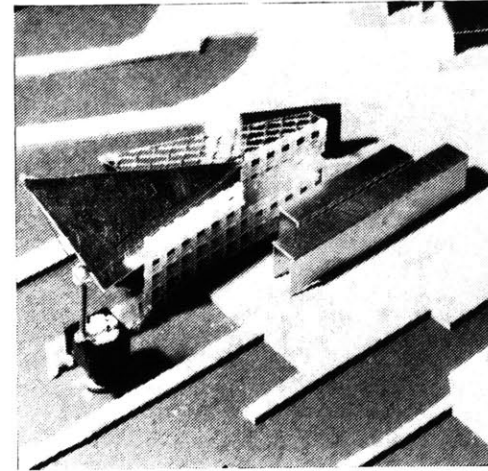


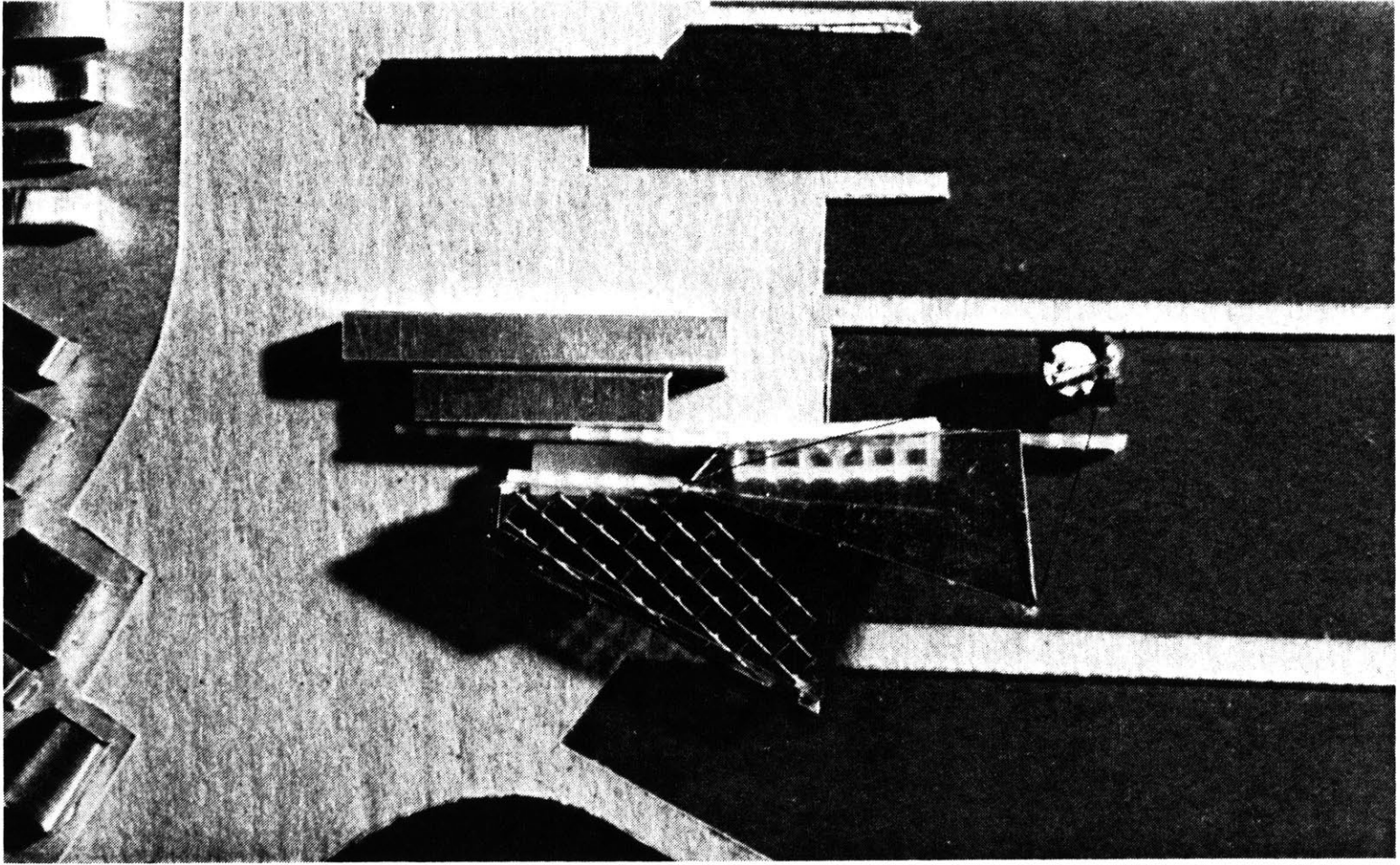
Model #2: February 24, 1990

Scale: 1" : 200'

The "Beacon". Actually a couple of thoughts were running through my mind while working on this model, making it more difficult. The first was the notion of a beacon in the harbor. In a sense this theatre is a gateway to the inner harbor. I was intending to give [the structure] a sense of presence. The presence was thought of as a tall mast, a crane-like structure that not only serves as a marker or "buoy", but also structurally supports the large covering / roof. The materials used in the model I thought might be analogous to the real materiality... sheets of metal, glass.

Another issue on my mind was the notion of our movement from the land to the sea. I wanted there to be a transformation in the scale of the space. We would begin on land in an enclosed room-sized space, and as we moved through the building toward the water, the space would open up culminating in the vastness of the piers. In the model this shows up as a wall that runs perpendicular to the water, a registration through the site from which space opens up and as it does the wall breaks down. A piece of lead shifts the geometry, responding to the direction of the pier, opens the site up to the city. Seating is suspended from "the wall" out over the water.



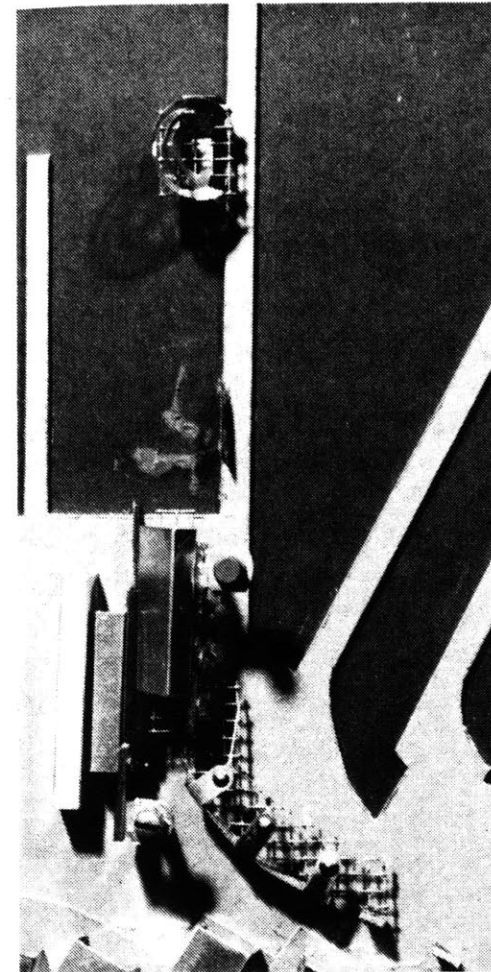


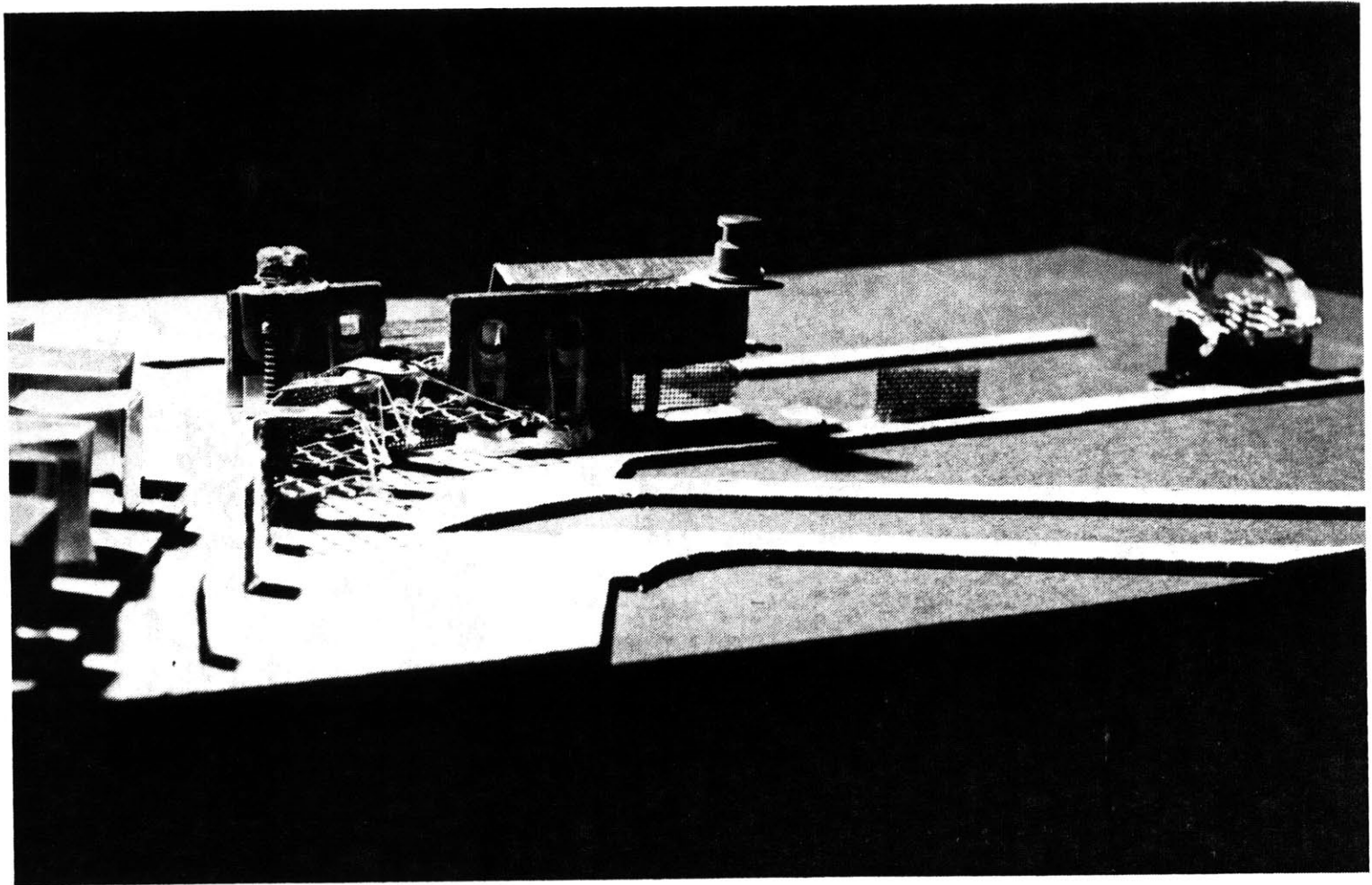
Model #3: February 28, 1990

Scale: 1" : 200'

Beginning this model the issue was connecting the theatre to the "park land" of the adjacent piers. With the understanding that the Conrail corridor might someday become a greenspace leading to the waterfront, the important issue then becomes how does the site tie into that fabric. Is there a connection, a terminus? The model begins with the curvilinear form of the pier and using it to inform the first move. This evolved into the wire screen suspended canopy, suggesting an entrance that leads through an arcade to the theatre. Again I seemed to pick up on the movement to the water with the directional roof forms parallel to the existing warehouses. At the culmination of the journey, the theatre stands more like an object - the water stage. The seating would actually be on the water and during a performance, would move out along the pier.

I wanted to explore the idea of entering at ground level and as you moved through the building the levels would rise - moving higher until you reach the theatre itself. I was thinking of the element of surprise much like I feel when entering Fenway Park. You enter in the base of the stadium and slowly move upwards, finally arriving in the colorful ballpark.



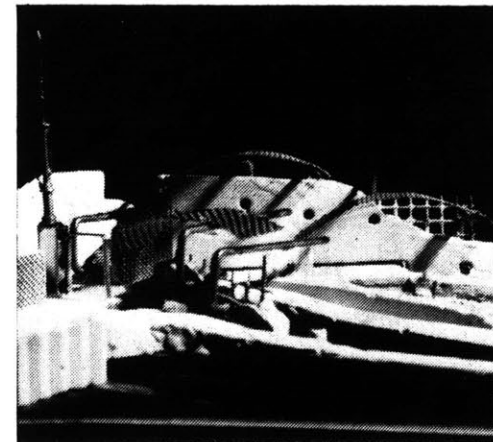
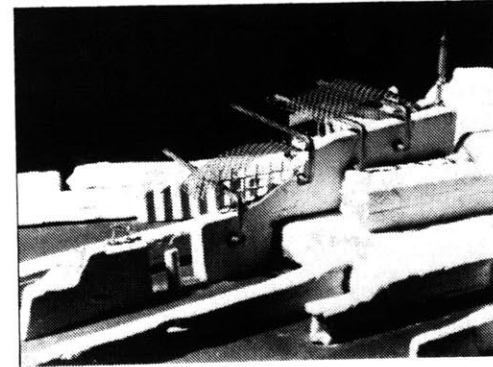


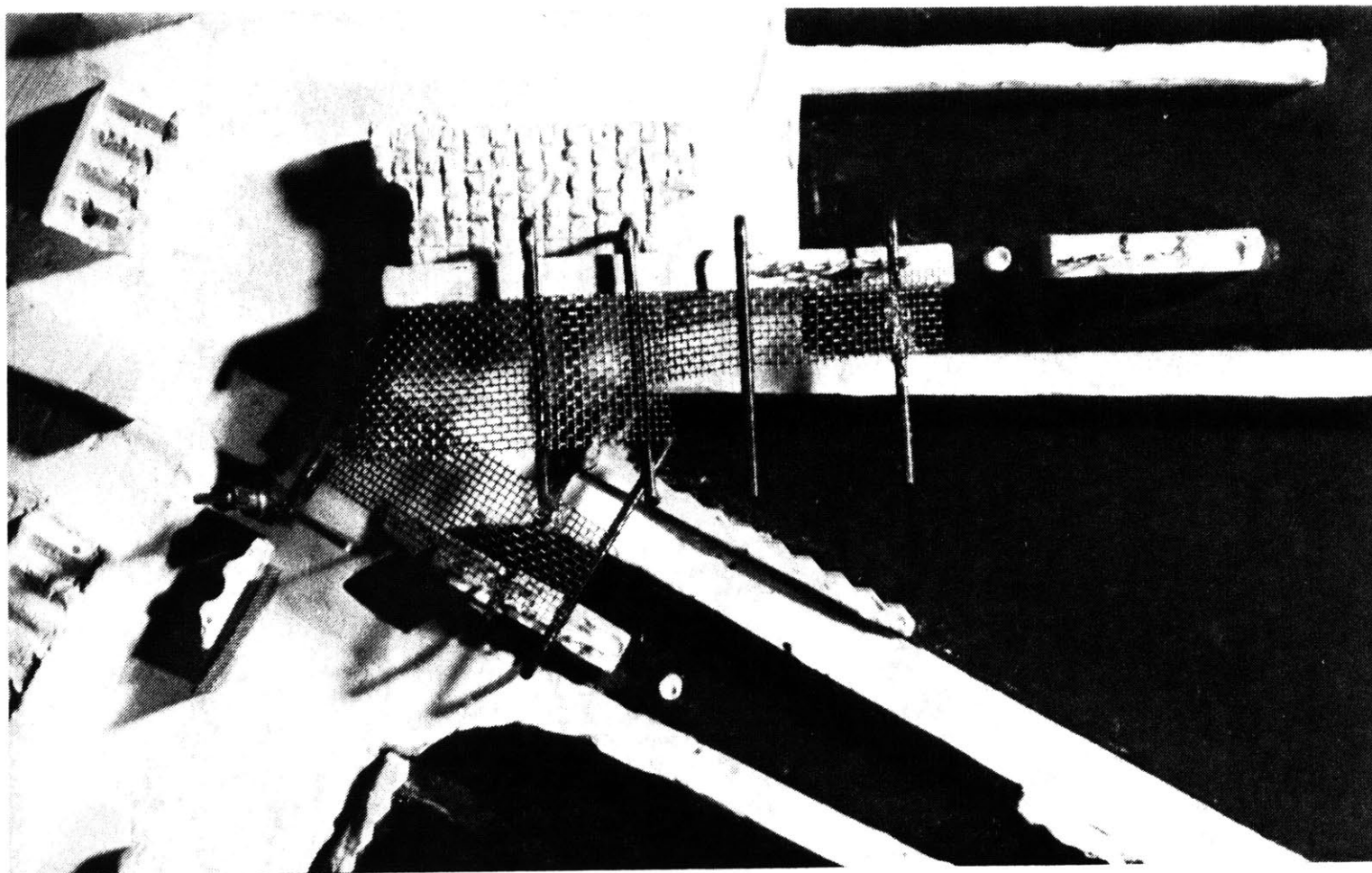
Model #4: March 3, 1990

Scale: 1" : 200'

...different medium. Plaster base - plaster cast walls and steel braces / copper mesh. Ideas beginning this model revolved around the notion of the sea walls as ground form definition. Extending out into the water - the walls decayed over time, revealing steel reinforcing onto which I attach new steel frames. [These frames] begin to further define the territory and enclosure. I am still hanging onto the idea of the connection to the rest of the waterfront park. What seems to happen in this model though is a redundancy of piers and sea walls...seems less in control - might need some restraint. The moves thus far suggest the need for a vertical element inland, perhaps signalling entrance.

The pier that points toward the city takes on more power, even to suggest another collective, maybe a gathering for smaller performances or events. Movement on the site seems to flow from the land along the "wall" and out to sea. The frames are at times below the enclosure and at other times break free and soar above. The transition of space is less defined architecturally.

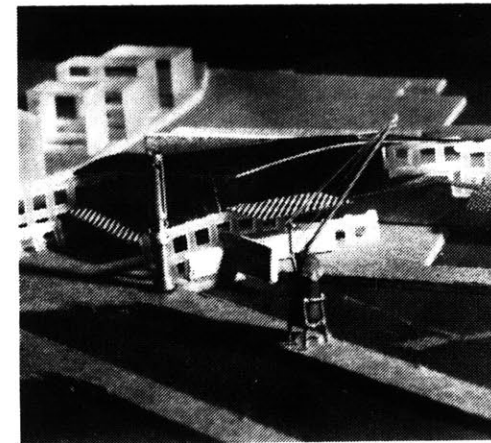
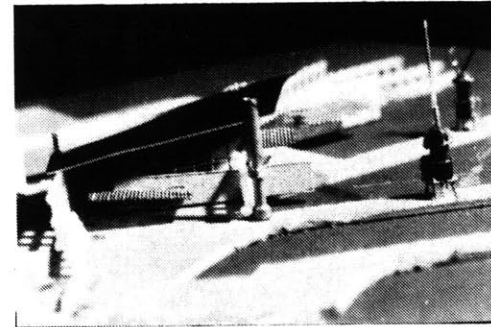
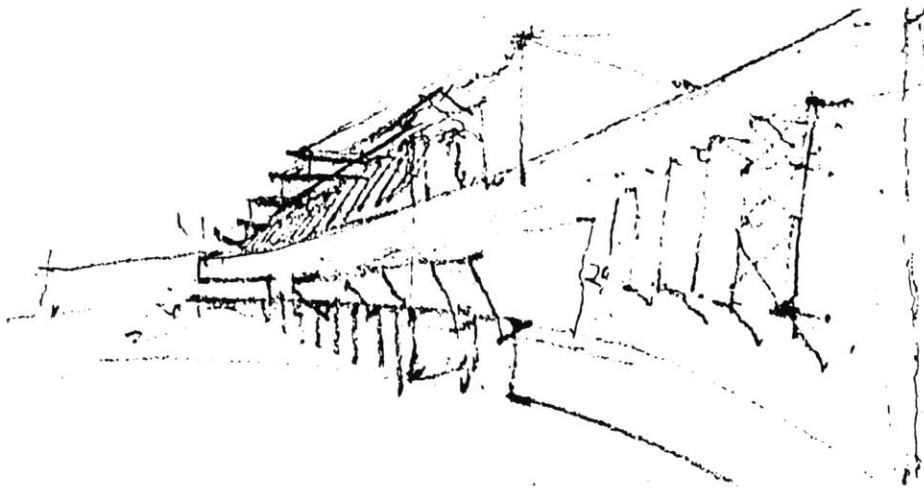


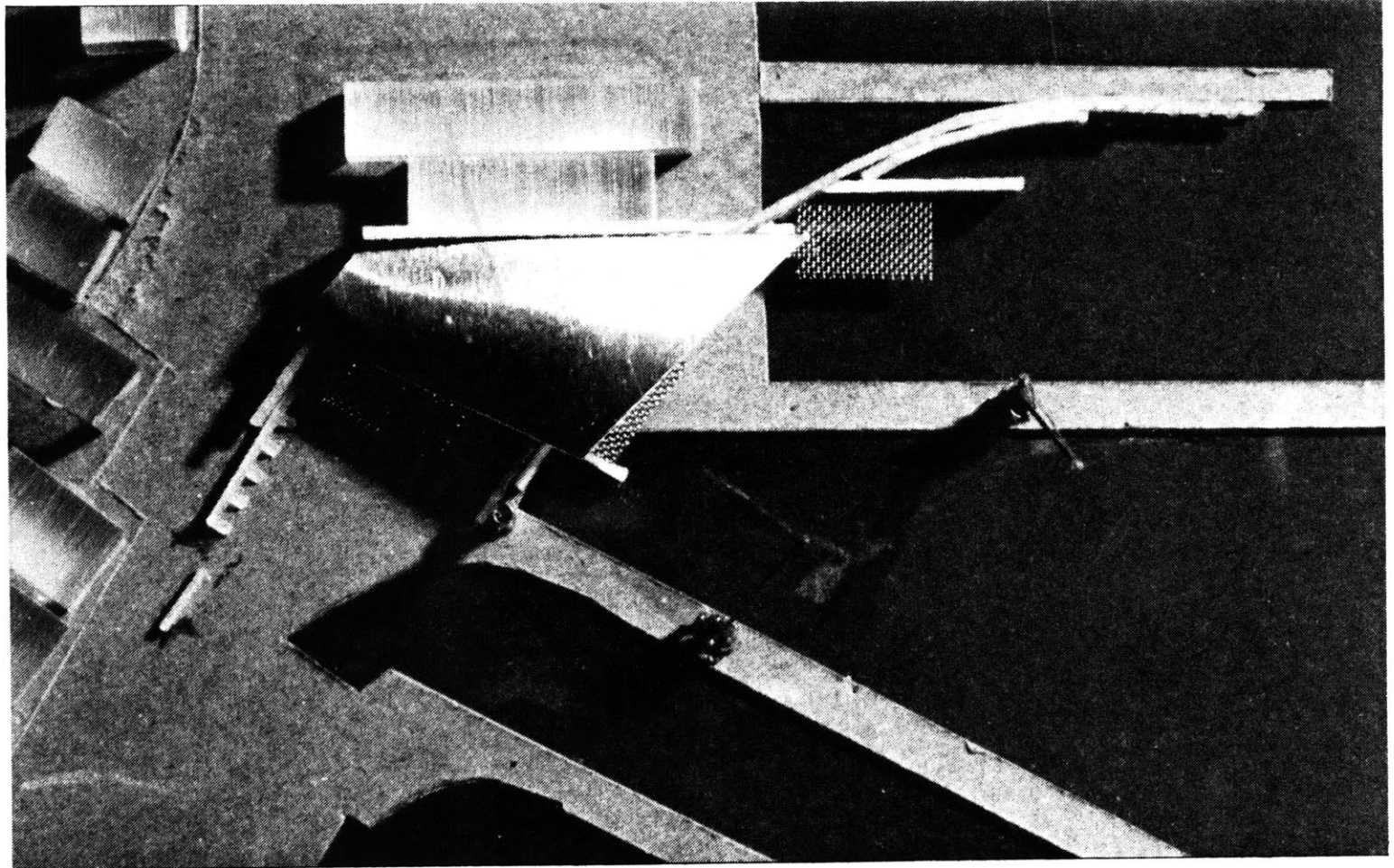


Model #5: March 9, 1990

Scale: 1" : 200'

The initial pass at this model didn't really work. Eventually it led to an interesting result. One that I believe began to speak about the previous conceptual models as well as strike out on its own. The notion of the sea wall now becomes inhabited with spectators and picks up on the sweeping curve much like the rocky coast of a harbor. The structure supports services for the theatre. It is in a way floating above the land zone. A secondary structure associates with the direction of the warehouses.

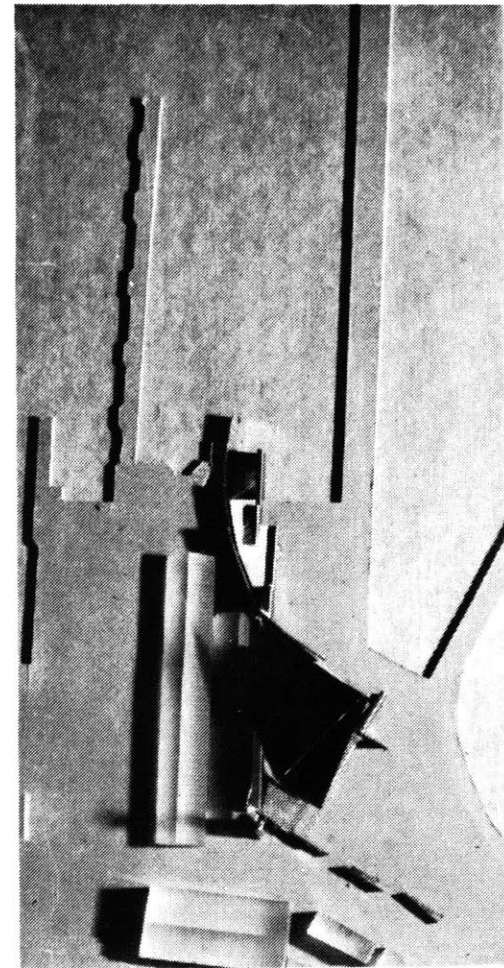
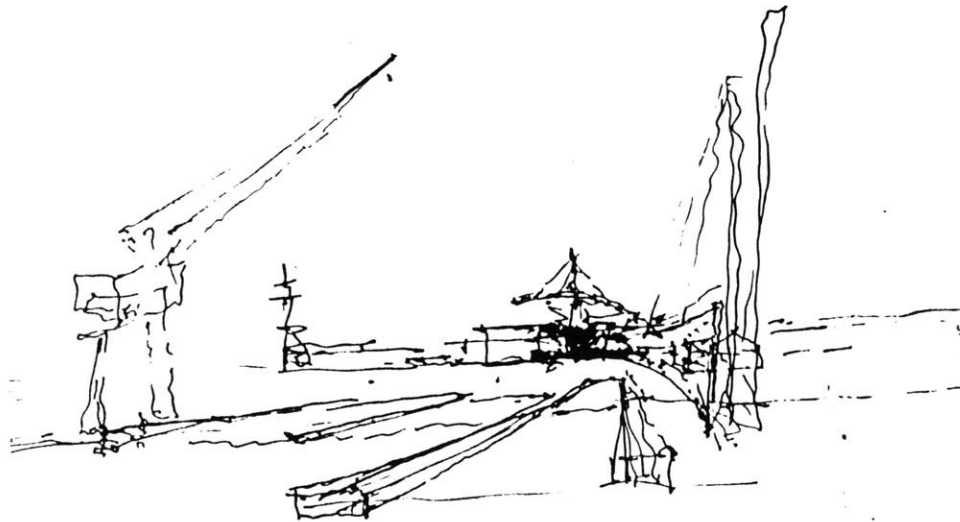


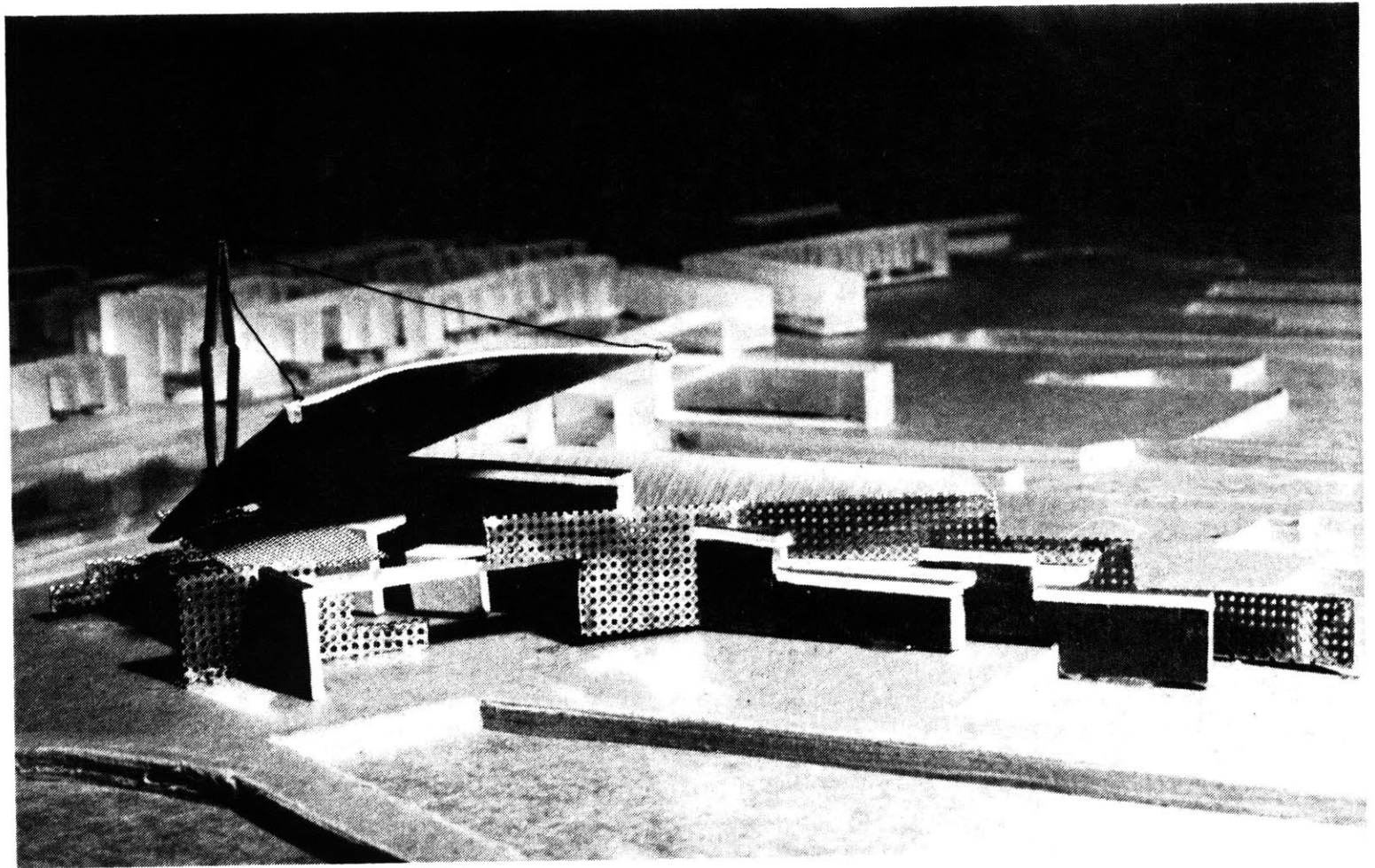


Model #6: March 12, 1990

Scale: 1" : 100'

I wanted to continue exploring model #5 at twice the scale, and the scary reality of scale became evident. Virtually the same size building on twice the site! The fact that there is not much difference between the two models signals a need to jump even further in scale. Immediately leave 1:100 and go to 1:40. [*the 1:40 model appears in the final design section.*]

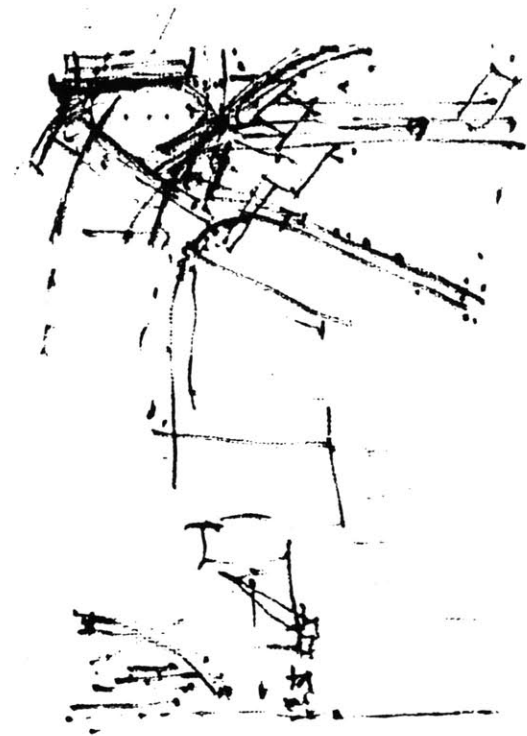
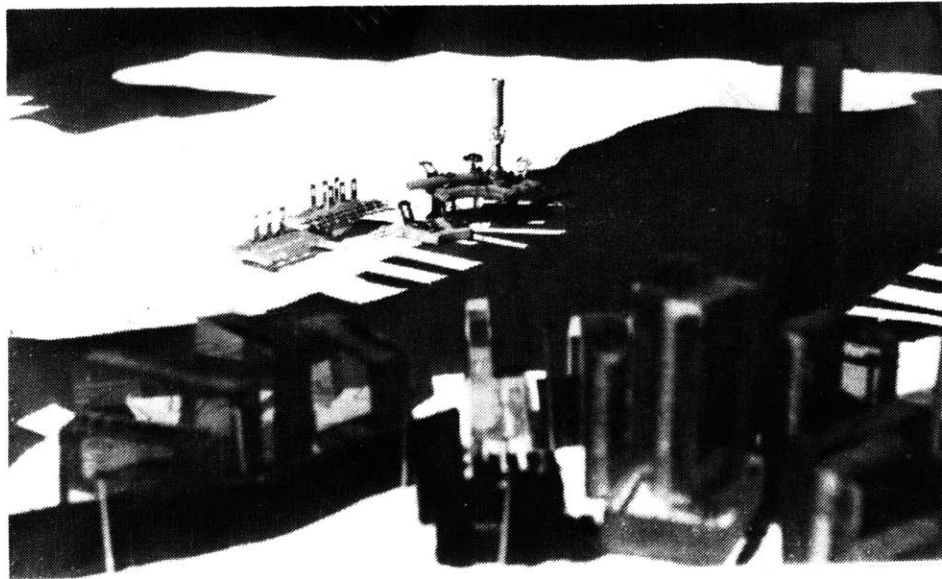


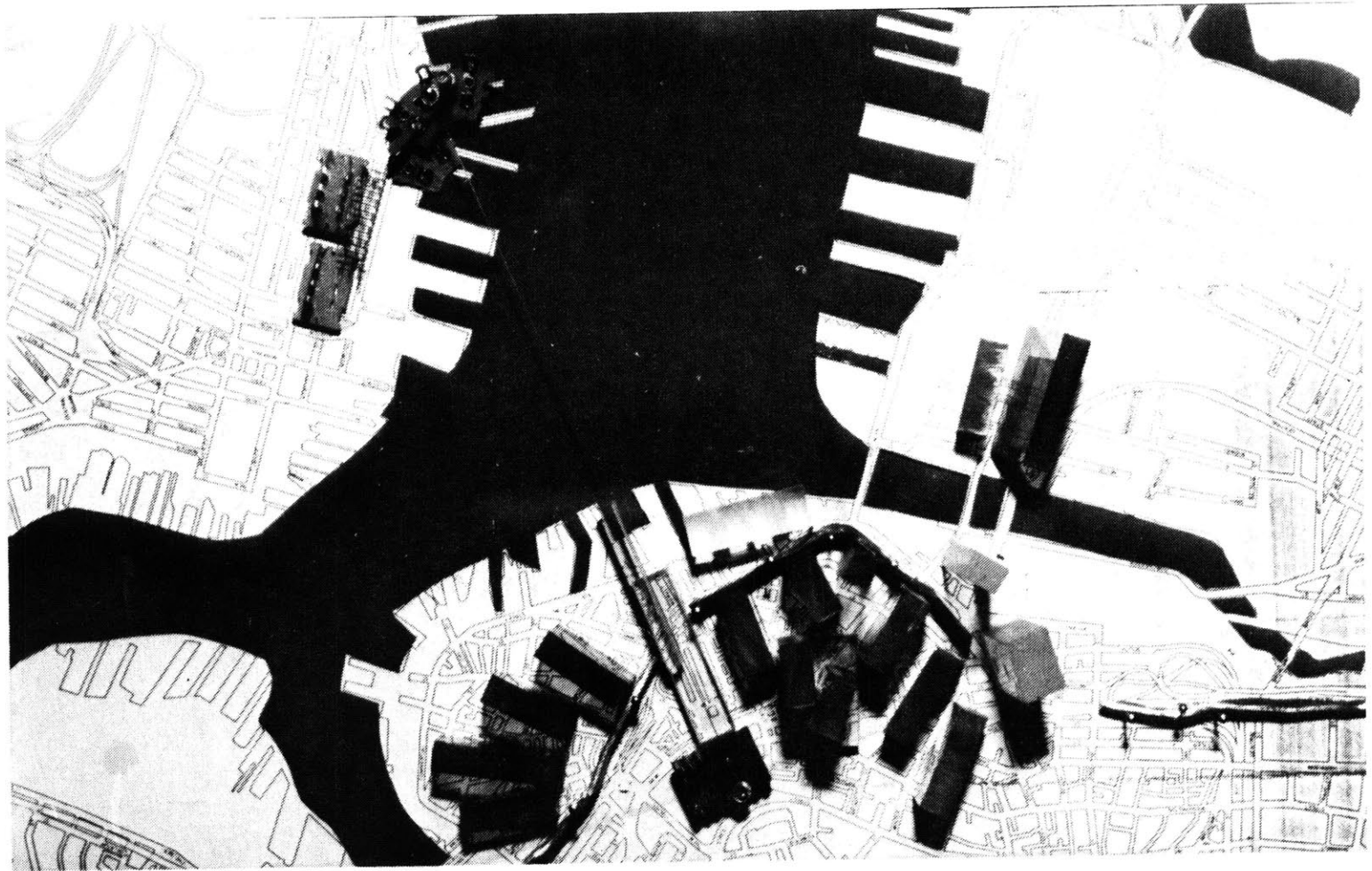


Model #7: February 19, 1990

Scale: 1" : 1200'

[This model is out of sequence because of its scale but was built just after model #1. This one was built to understand the site in the larger context of the city. No notes were written.]

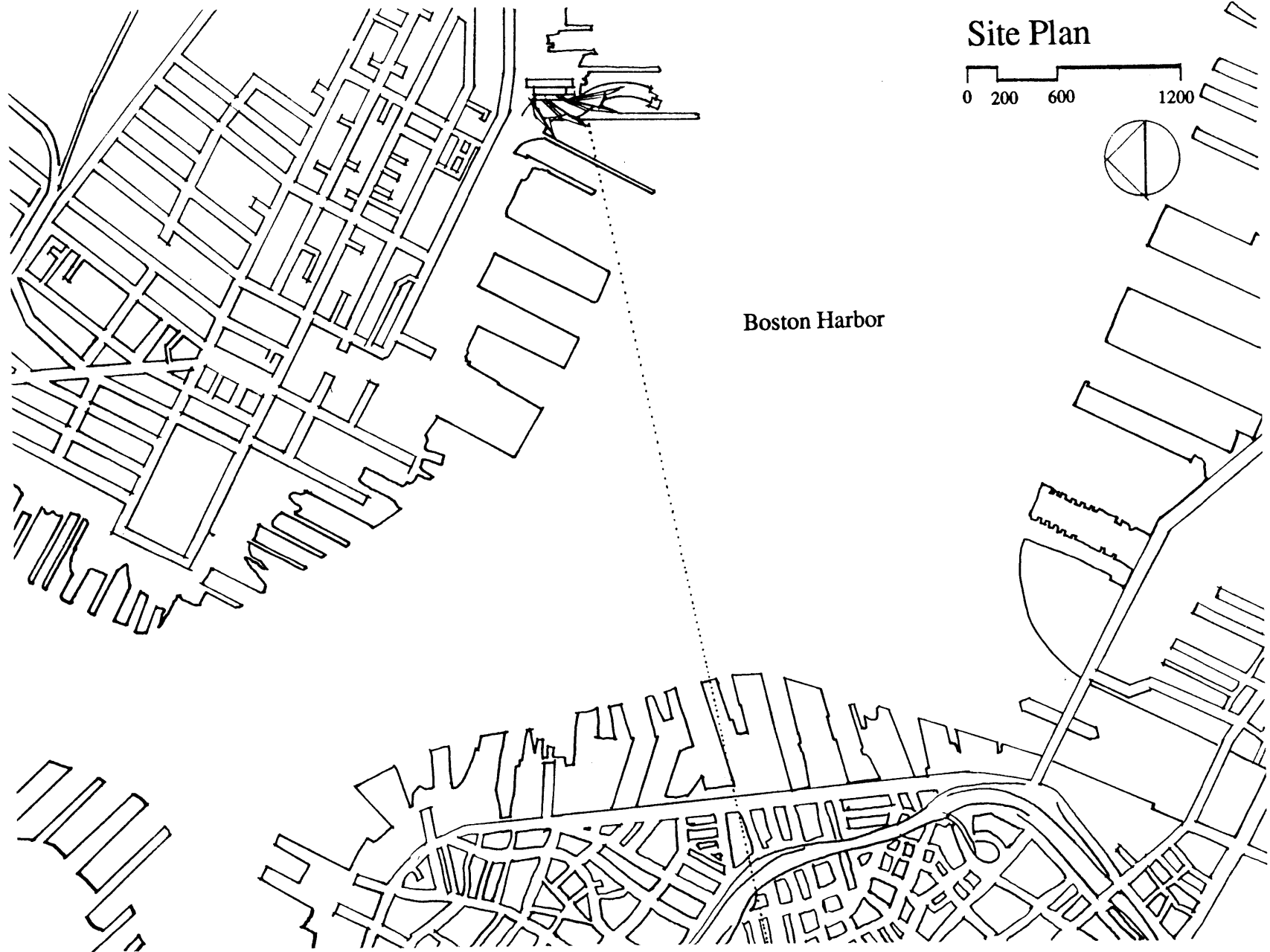


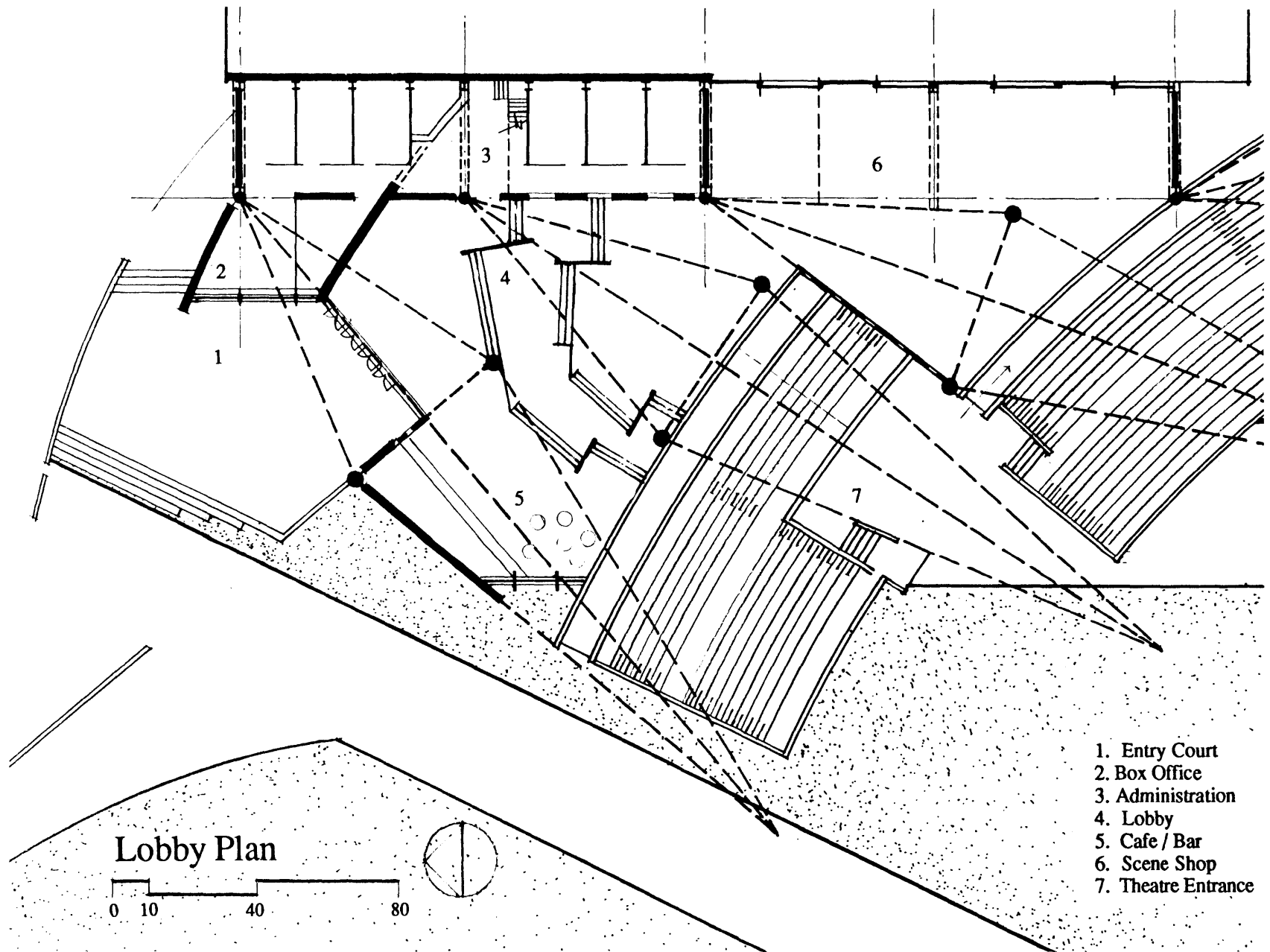


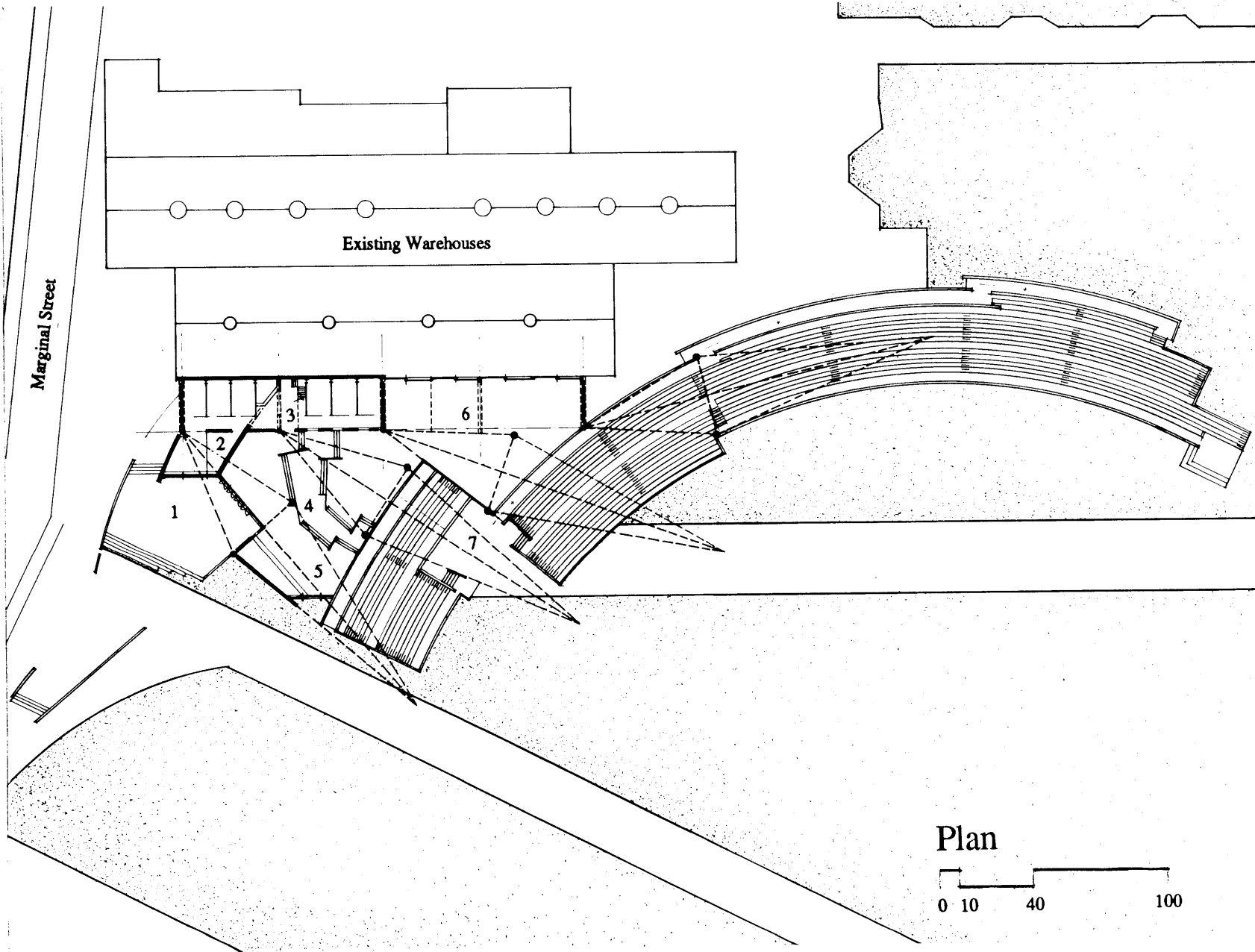
The Design

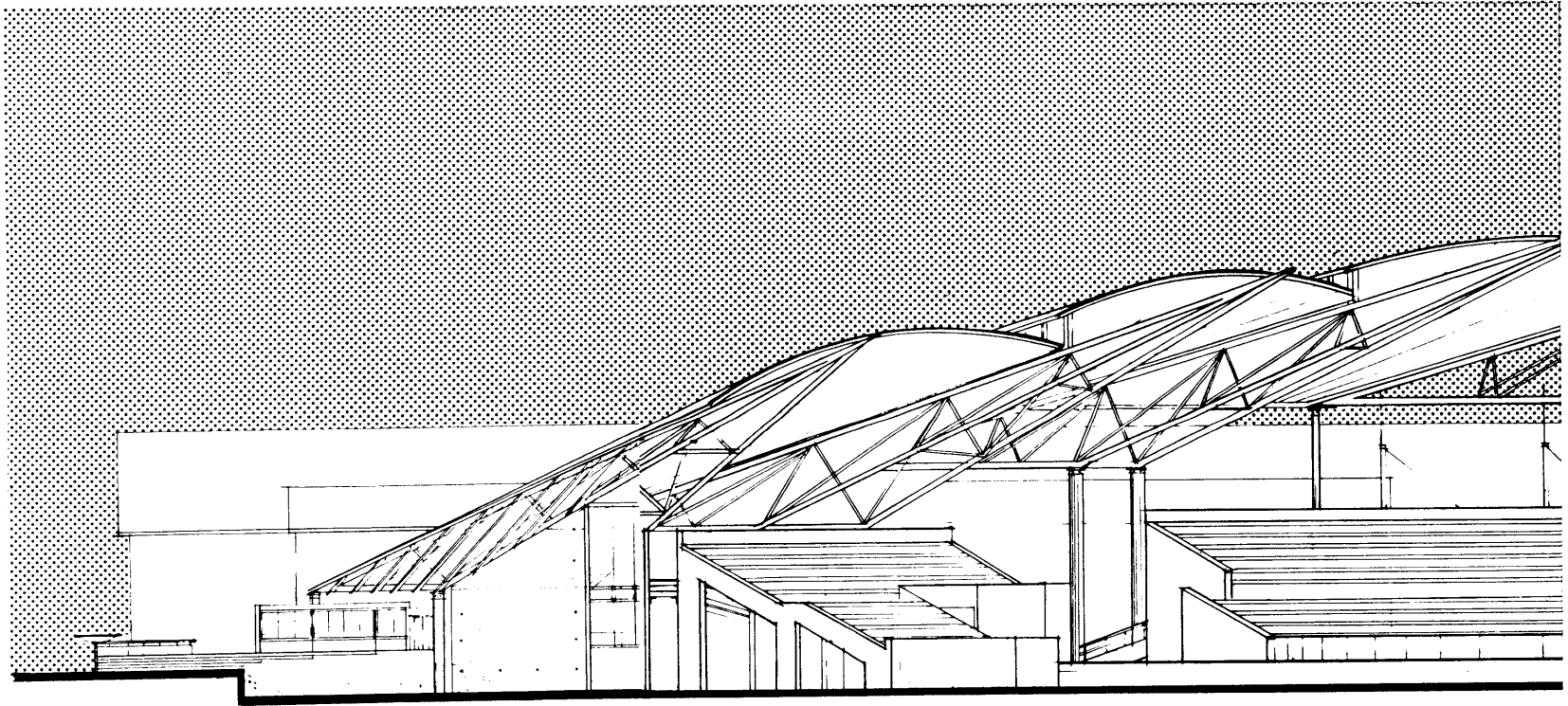
The 1" : 40' model proved to be crucial in the evolution of the final design. In this model, which appears at the end of this section, huge trusses become the major structural element. The land form is defined by the sweeping arc of seats, while the sky form is composed of this steel framework soaring above. In plan, four major trusses sweep out over the land and towards the water. Their character is much like the cranes, dynamically poised. This model suggests a variety of roof closure, both above and below the truss. The entrance remains unresolved.

The final design evolved from that important model. The trusses take on an even larger dimension, the roof becomes a shell which rises up and out over the water much like sails of a ship. The entrance is reached by walking over a small channel of water and up a few steps to the entry court. Here, the trusses rise above and one senses the beginning of the theatrical journey. The lobby is articulated with changing levels and is shaped such that impromptu gatherings might take place. The stadium sweeps underneath the structure engaging the enclosed portion of the theatre. At this point the seats are displaced creating the entry into the stadium and an access ramp begins to gently rise on the outside of the curve.

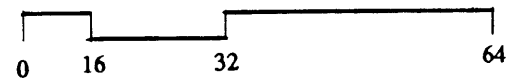
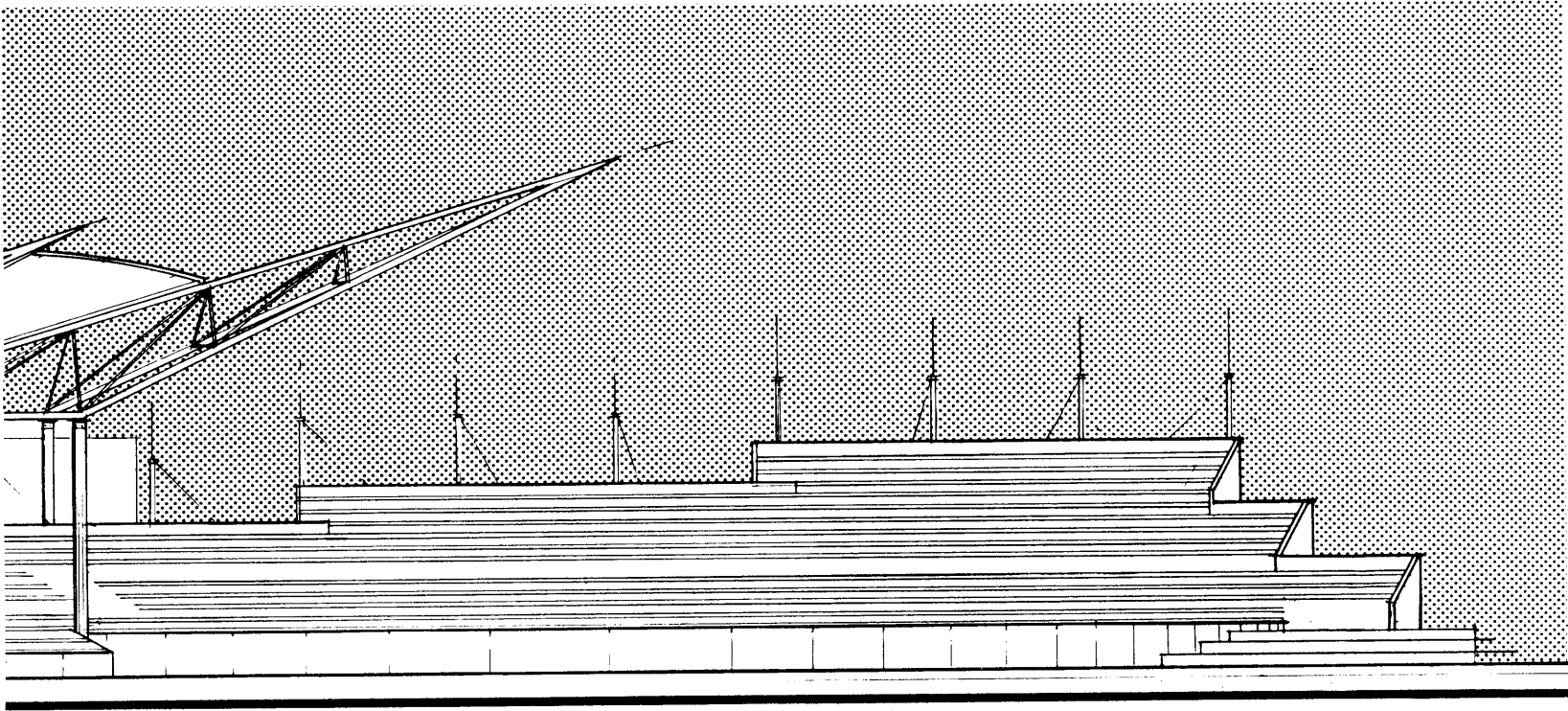


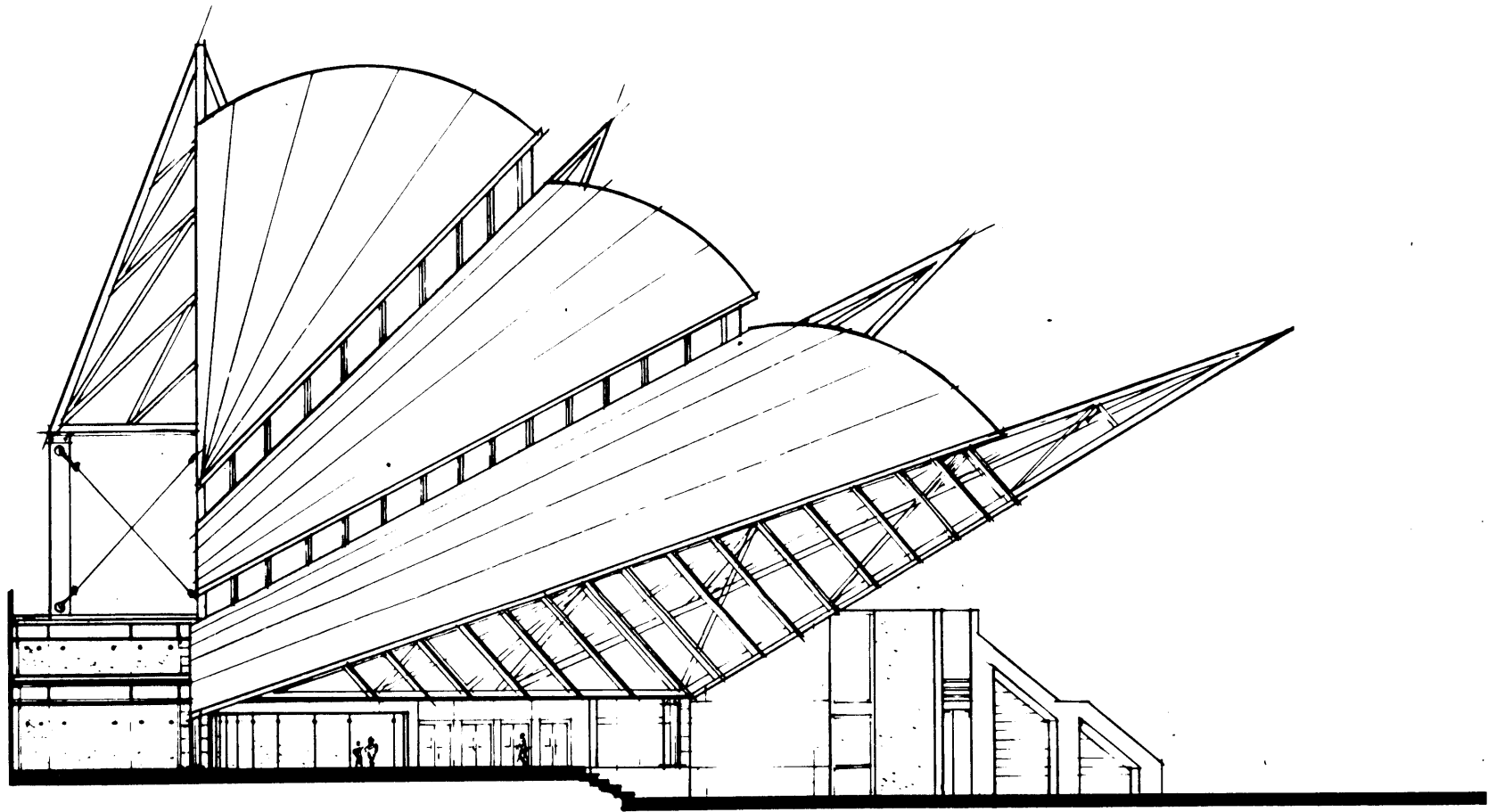




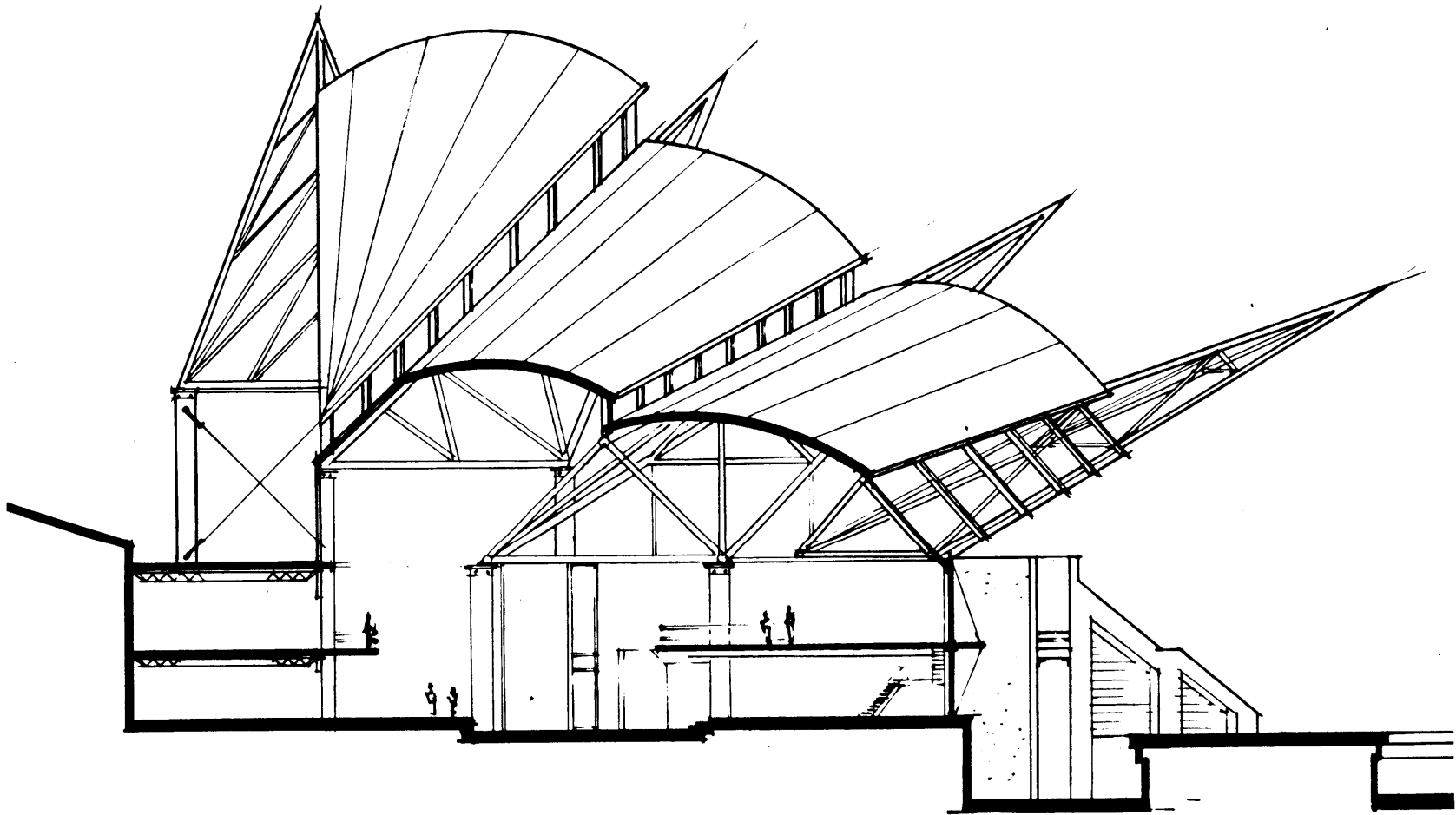


West Elevation

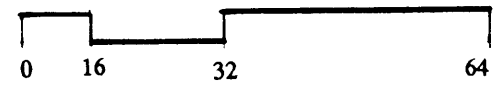


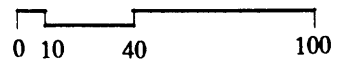
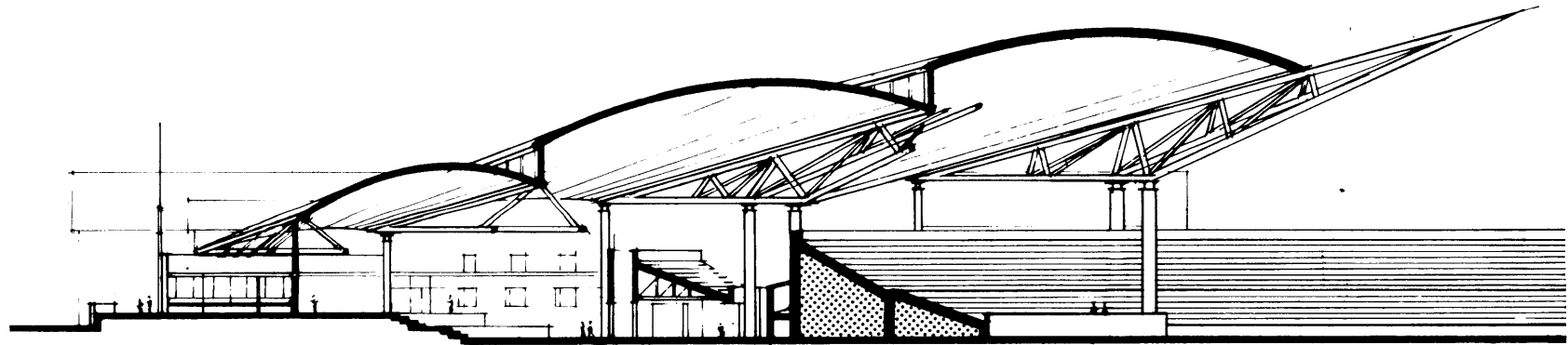


North Elevation - Entrance

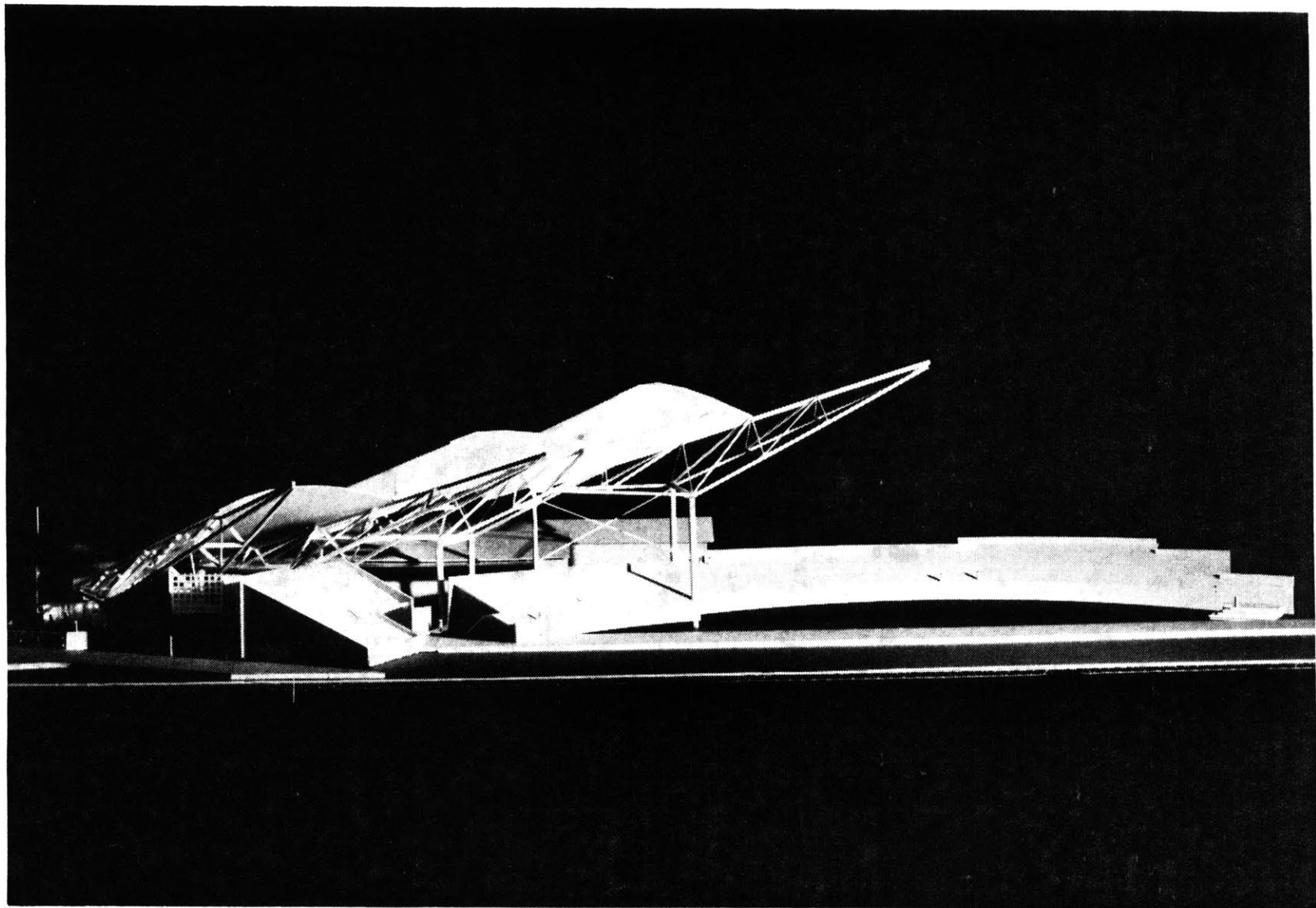


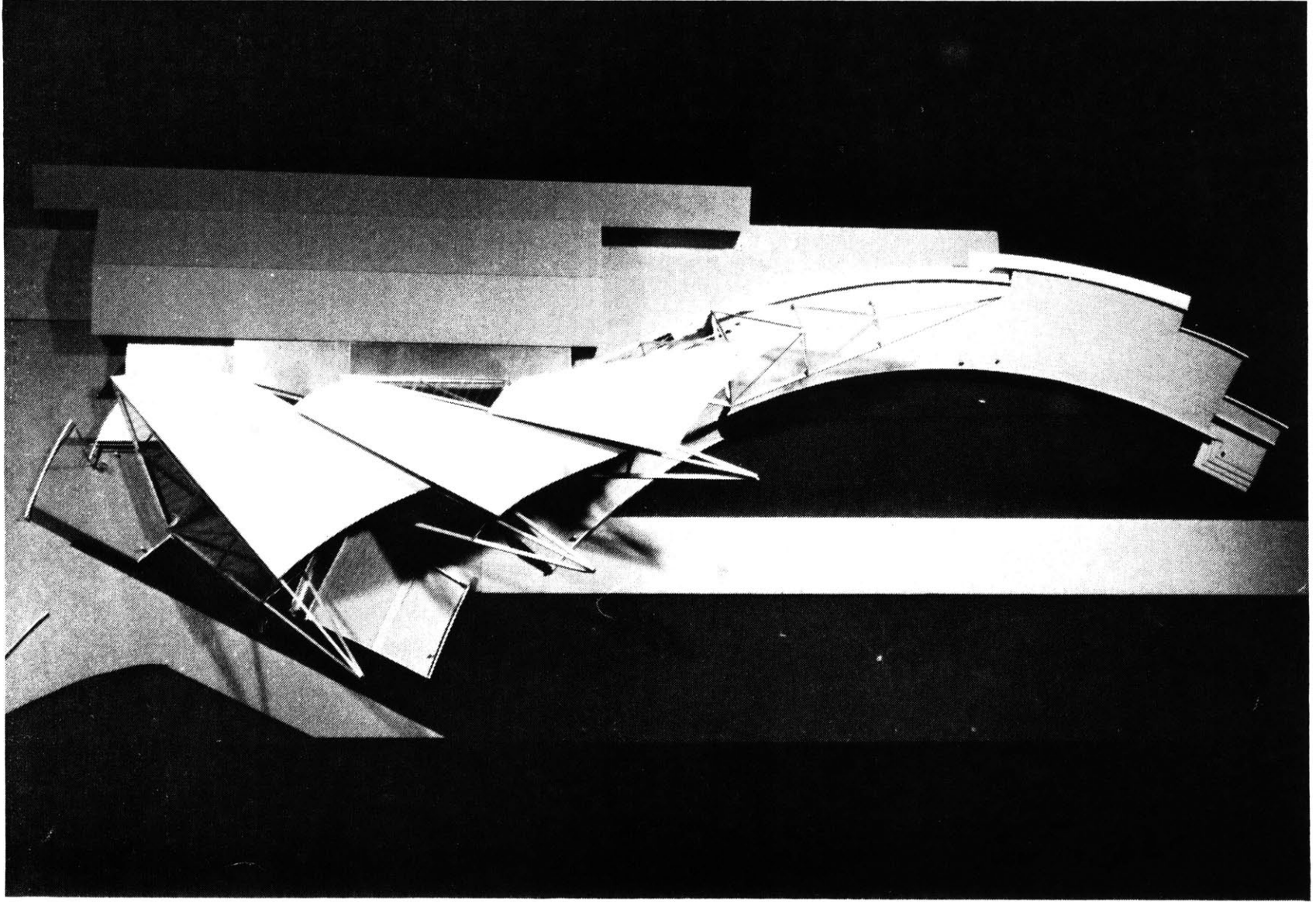
Section Through Lobby

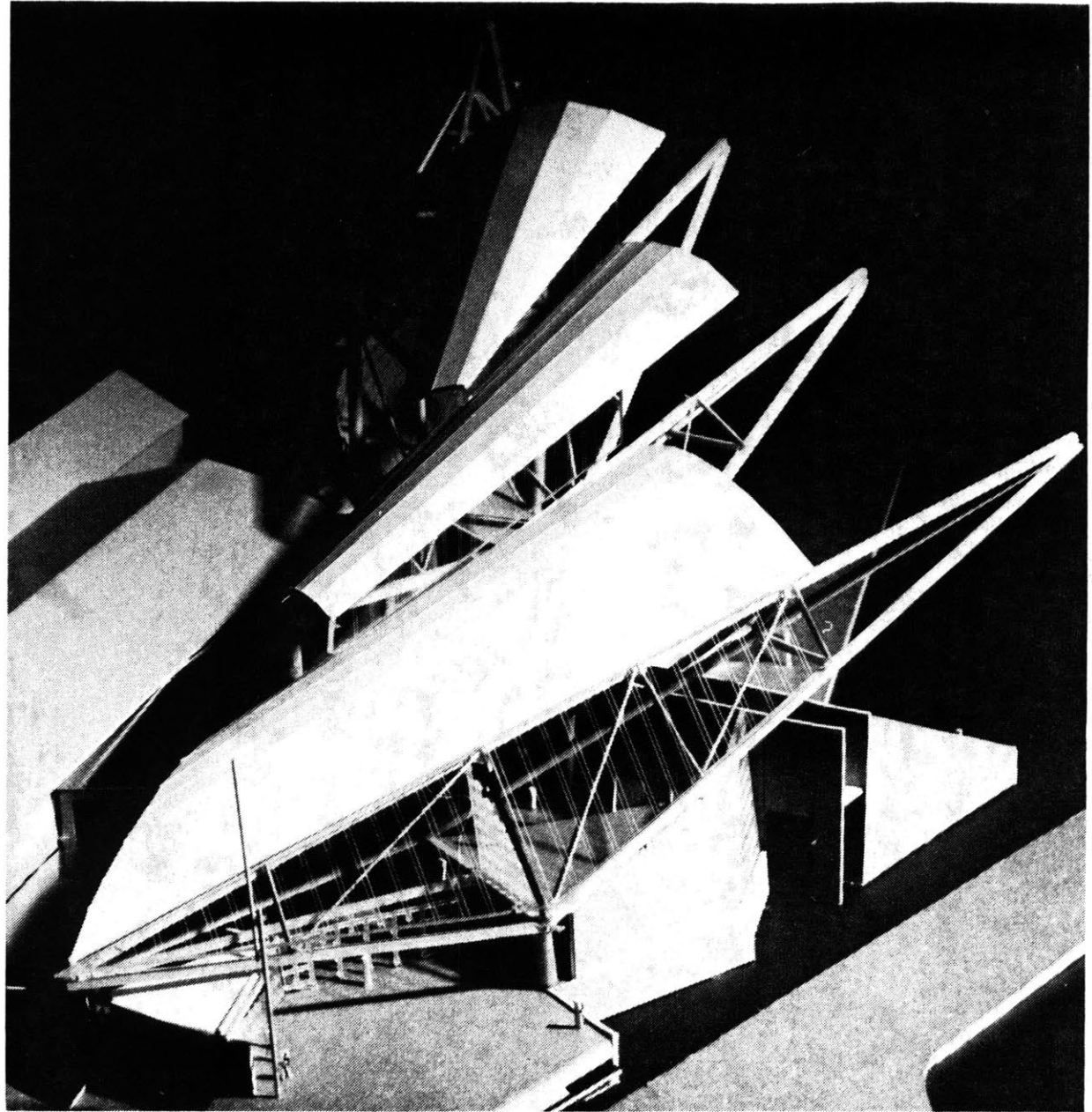


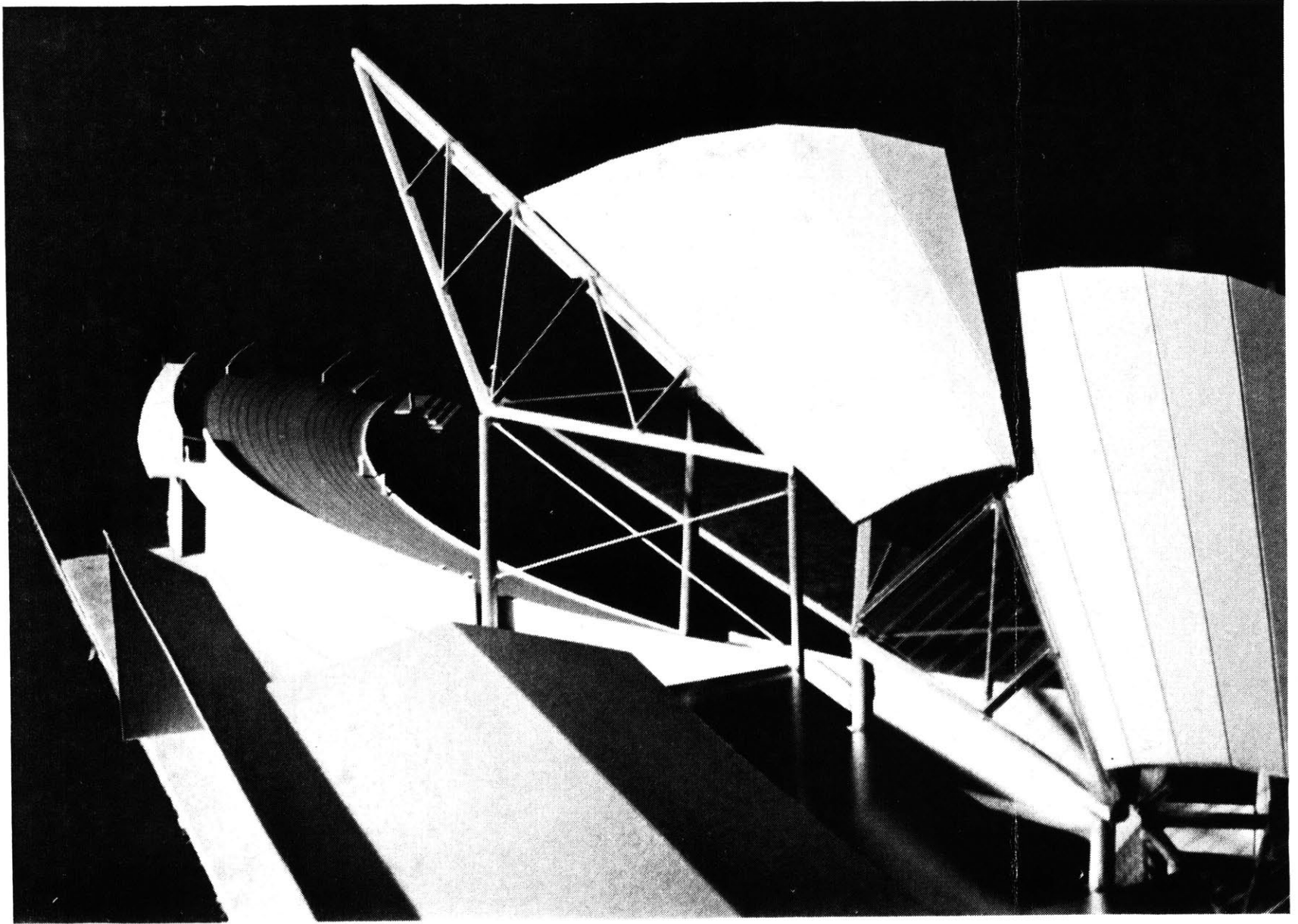


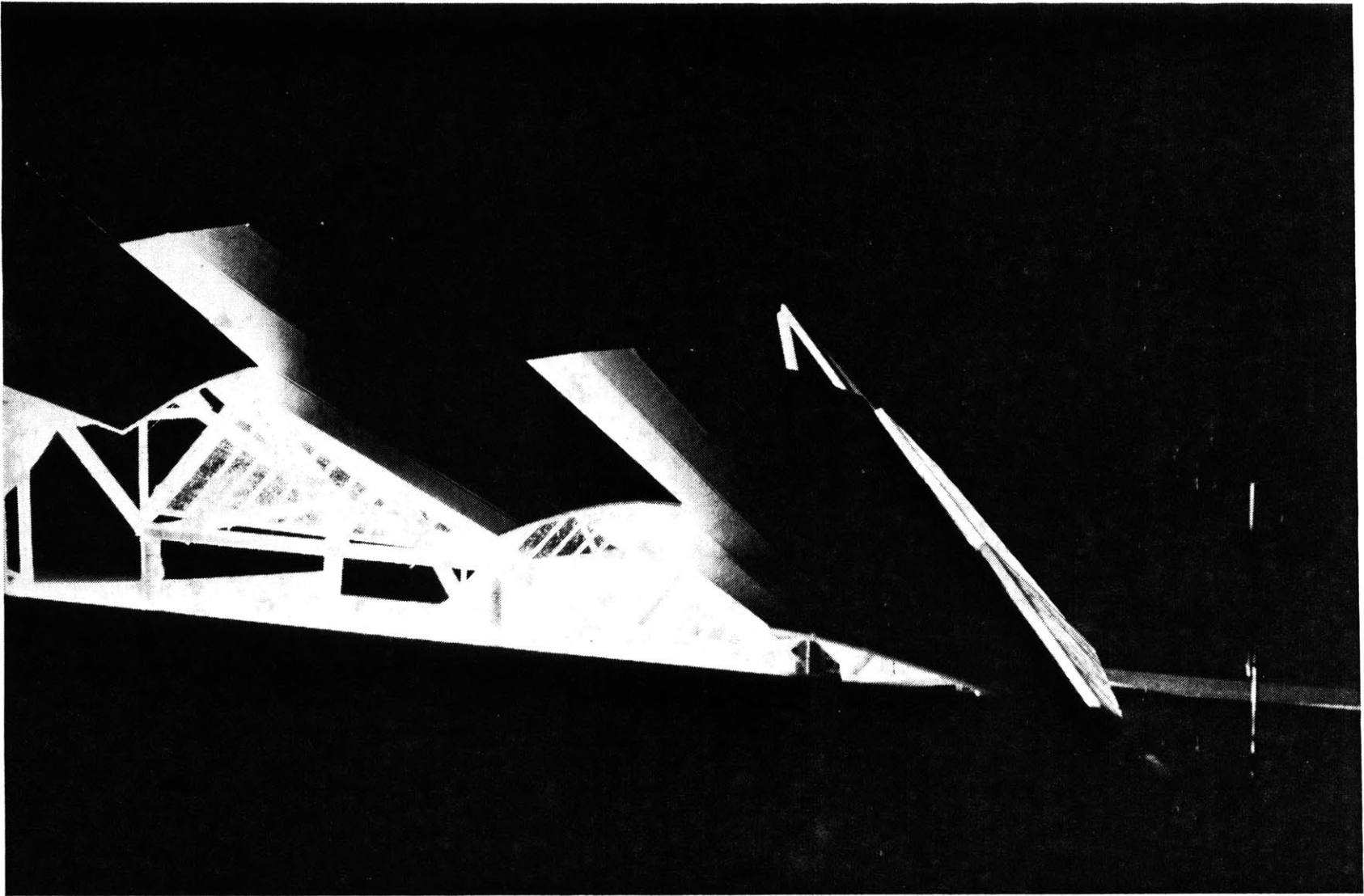
Section Looking East

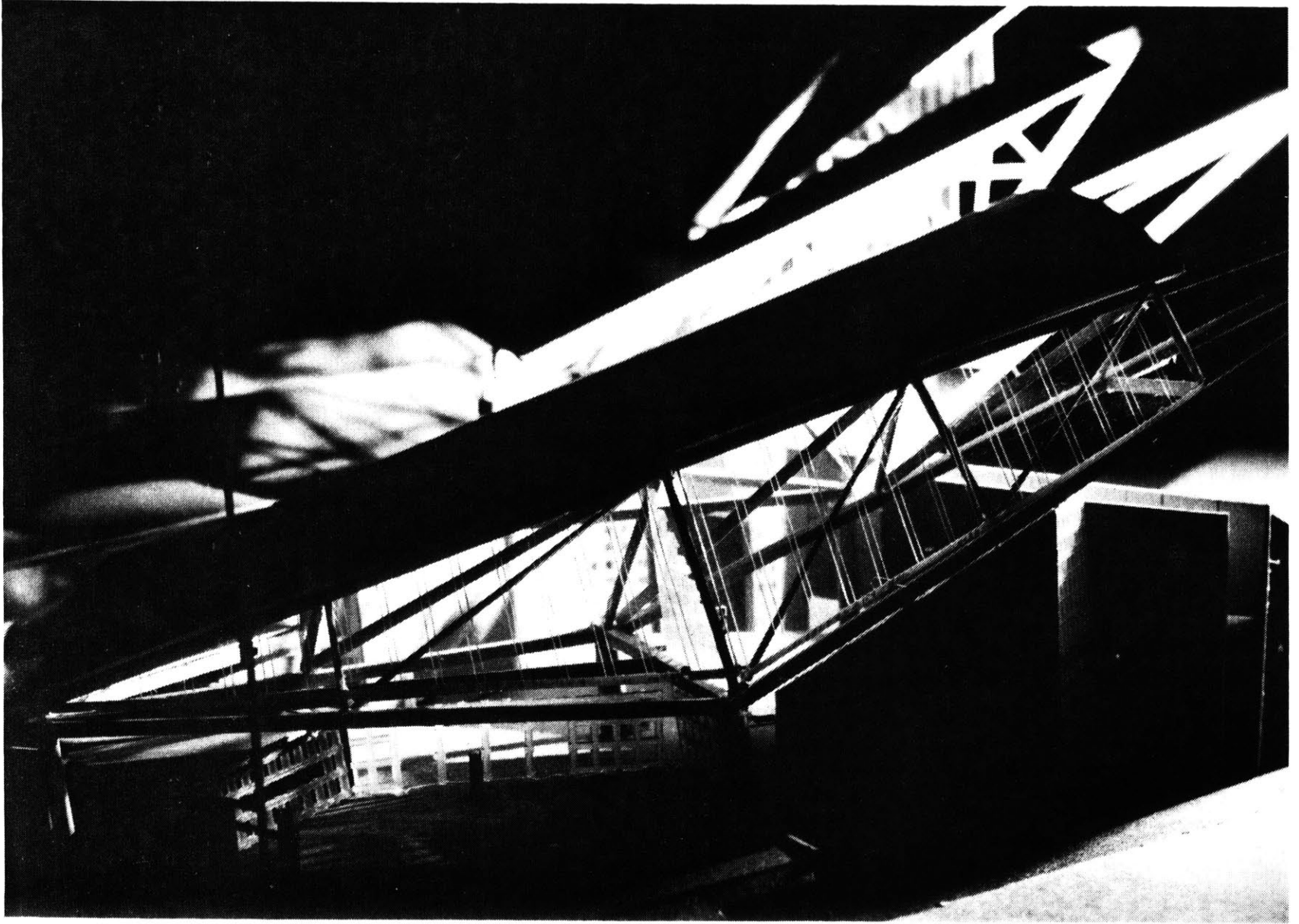




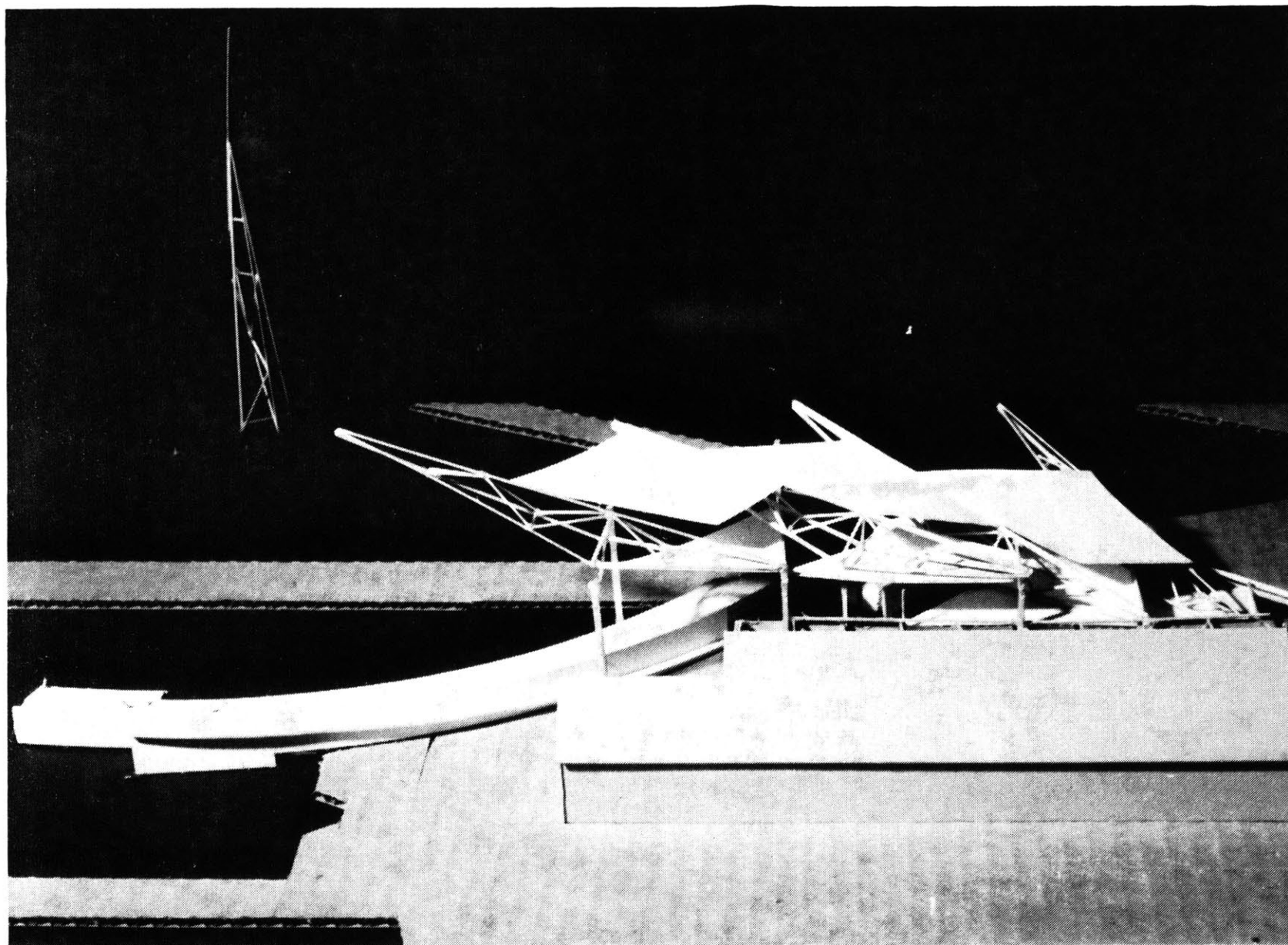




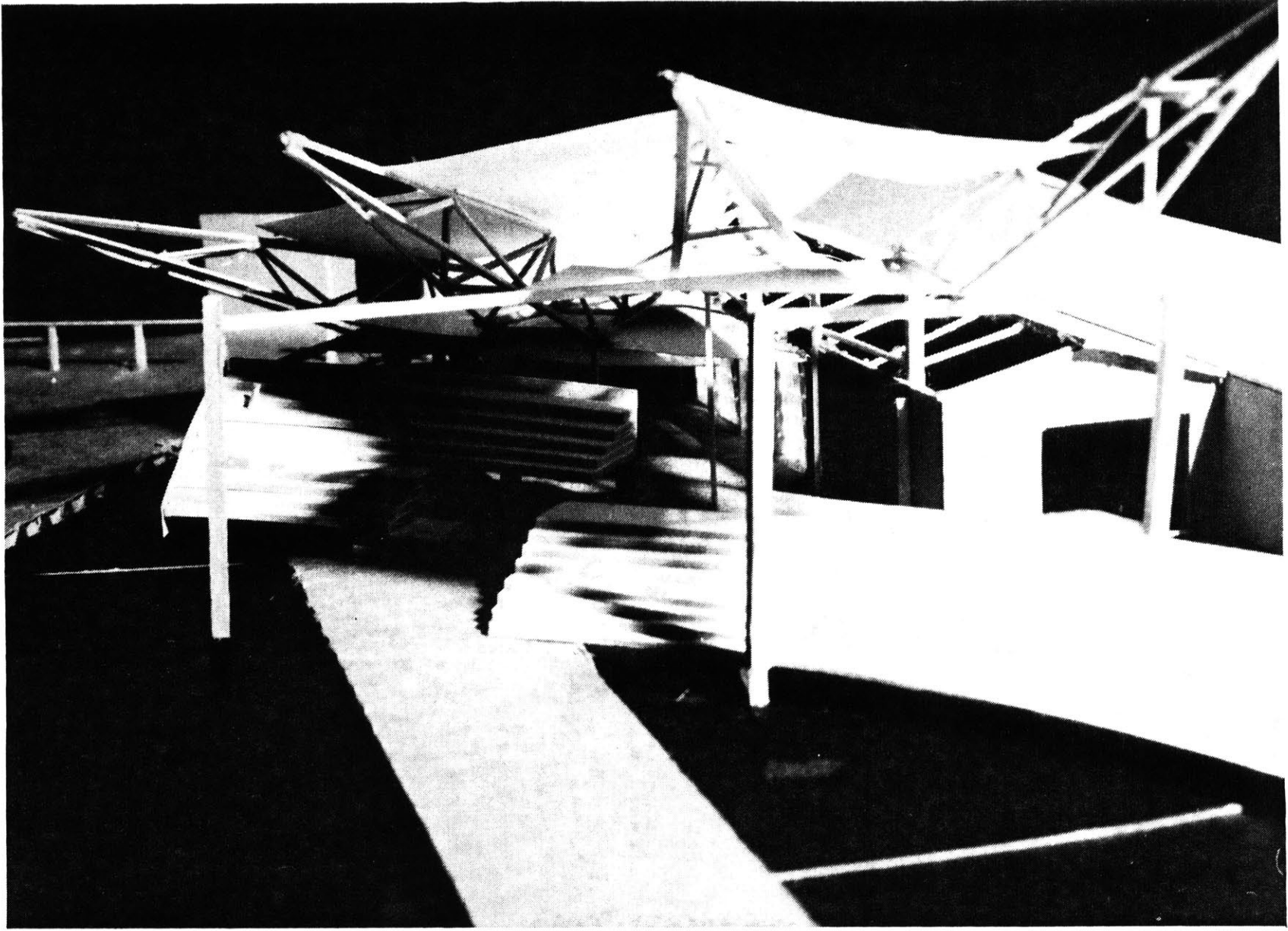








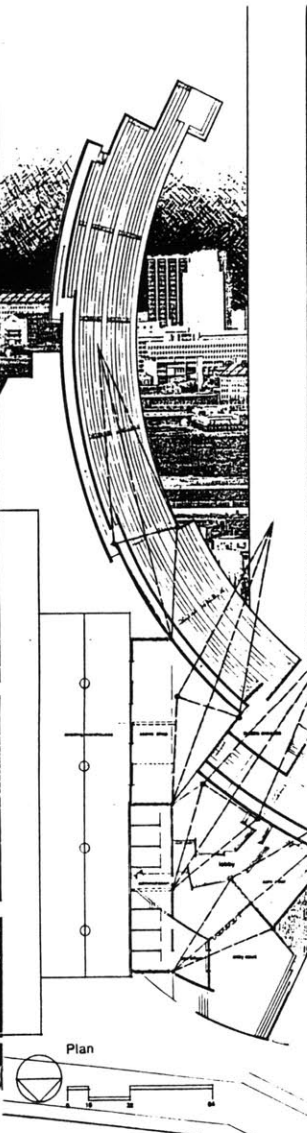
1:40 model



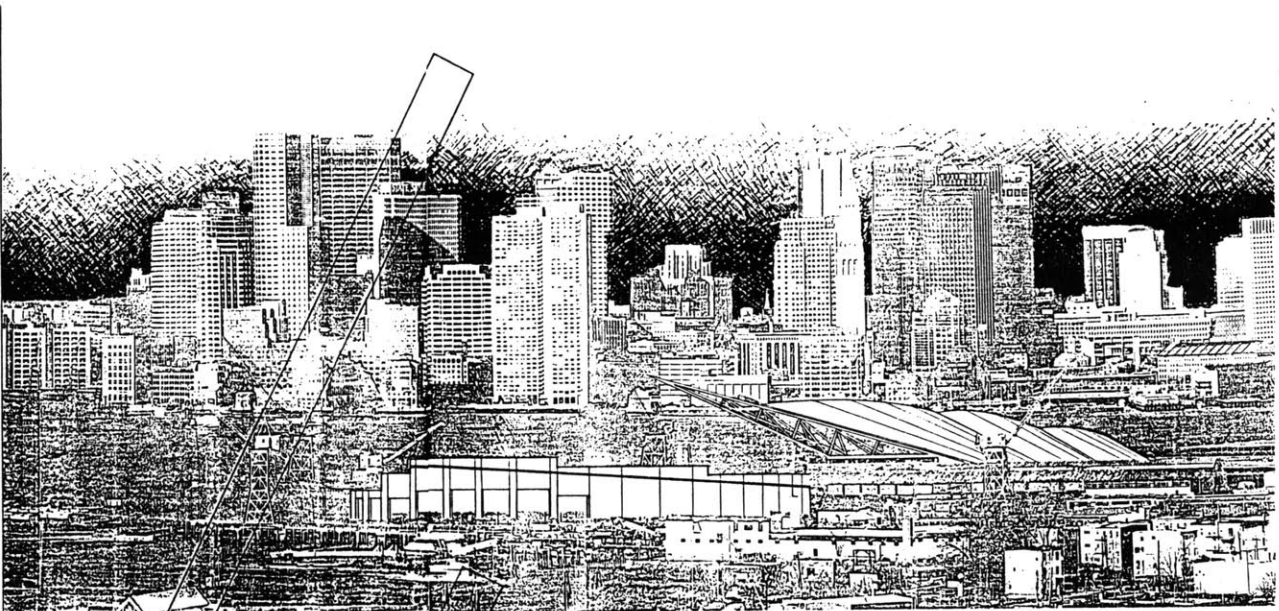
Appendix

The Competition

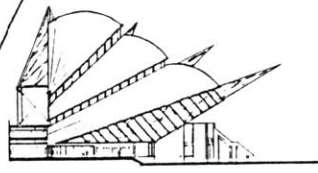
In addition to completing this thesis for M.I.T., I decided to enter my design in an international student competition sponsored by the Royal Institute of British Architects in London. The competition this year was titled "Theatre: A Place for All." The only programmatic requirement for the design was that there be a "setting for performers and spectators ." We were free to choose our site, preferably one that we knew, and were required to submit four 24" x 36" sheets "without report." Because of the nature of my site and the program of the theatre, I chose to arrange my four sheets so that they read as one board.



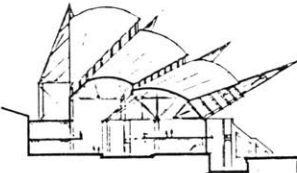
Plan



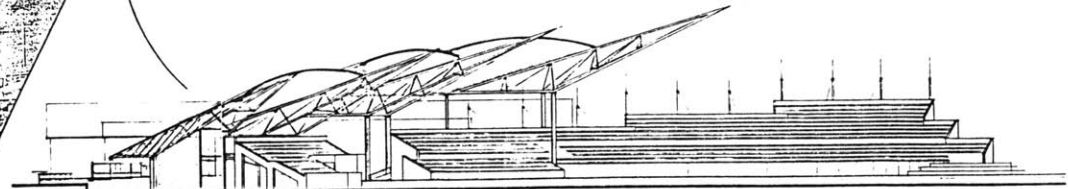
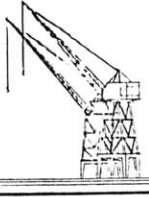
View Towards The City



North Elevation - Entrance

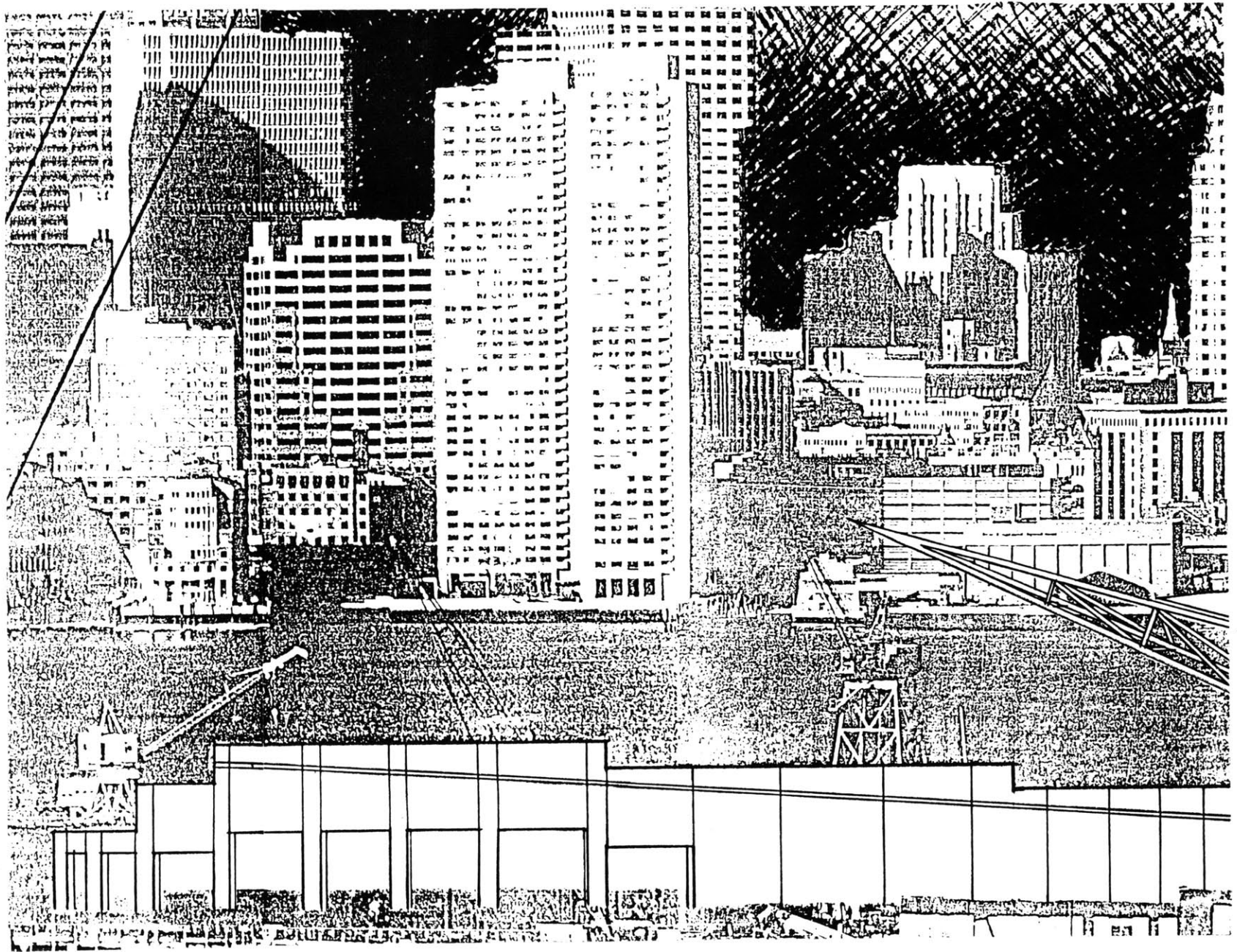


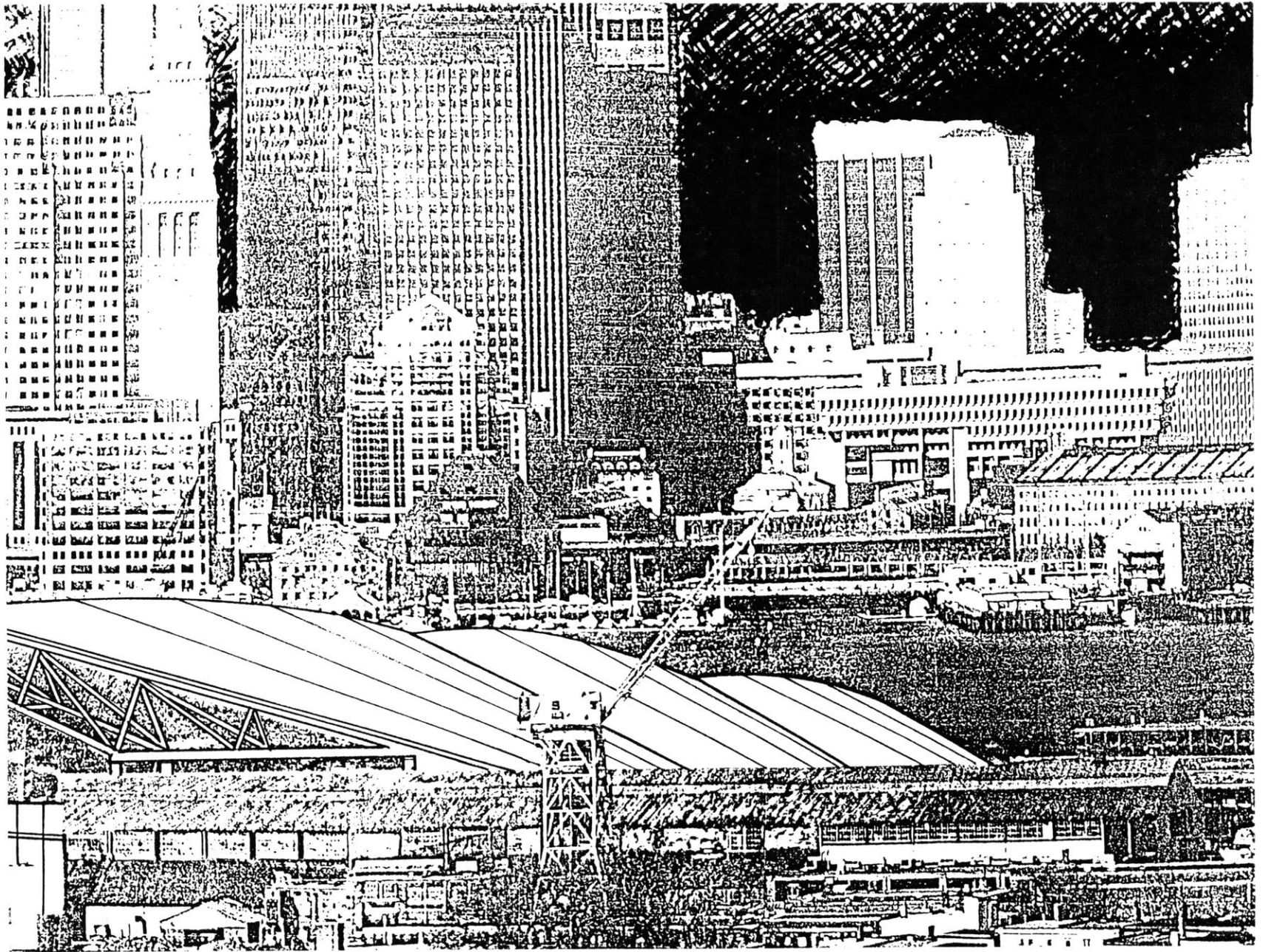
Section Through Lobby



West Elevation

Water Rites A City Stage For Boston





Endnotes

1. Anthanasopoulos, p. 148
2. Krieger, p. 39
3. Ibid, p. 39
4. American Federation of the Arts, p. 7
5. Ibid, p. 8
6. Anthanasopoulos, p. 136
7. Ibid, p. 137
8. Ibid, p. 143

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