

DEMISTIFYING MIT: the MIT Center for Culture and the Arts

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Submitted to the Department of Architecture in partial fulfillment of the requirements for the
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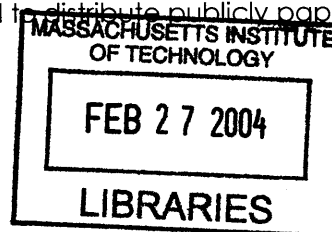
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ROTCH

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Abstract:

The Massachusetts Institute of Technology is physically and psychologically isolated from its surroundings. It is an introverted experience. To the public, MIT is hidden under a shroud of invisibility. The goal of this thesis is to demystify MIT.

This thesis is proposing a NEXUS, or an interface that acts as a bridge between MIT and its surrounding communities. The Nexus will bring to the public the cultural and performing arts activities that are hidden inside this institute which, in addition to its world-class technology courses, is home to excellent cultural and arts programs.

The Nexus will be MIT's showcase for music, theater, visual arts, and community outreach programs. This dynamic place will incite personal exchange between the communities of MIT and the city of Cambridge.

By investing in a rich program of cultural entertainment, MIT will be contributing to the enhancement of quality of life of its hometown. Consequently, MIT's public image will be enhanced, and the Institute will become an attractive place for the top researchers and graduate students.

The site chosen for the Nexus is currently an undeveloped area located between Albany Street and Vassar Street, at the intersection of Massachusetts Avenue. This site is currently treated as the back alley of MIT. Nonetheless, it is in fact the entrance to MIT, and more importantly, a gateway to the city of Cambridge.

Thesis Advisor: Jan Wampler
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Table of contents:

Abstract	5
TOC	6
Introduction	9
Methodology	12
1.0 Research paper: The Nexus at MIT: a proposal for establishing a socio-cultural center at the Massachusetts Institute of Technology	15
2.0 Project analysis:	
2.1 Urban analysis	37
2.2 Site analysis	39

3.0	Design schemes:	
3.1	Initial design approach	43
3.2	Final design strategy	45
4.0	Presentation Drawings	
4.1	The Nexus	47
4.2	The MIT Music Hall	63
	Bibliography	75
	Acknowledgments	77



Introduction:

In contrast to MIT's world renowned reputation as one of the top schools in the world, its campus has continued to suffer from a lack of proper identity for many decades.

When one arrives at Harvard University, whether by the T, walking or by car, there is a clear sense that he has arrived at a place. **One does not arrive at MIT.** One passes through MIT.

MIT, in my opinion, is an architectural Disney-Land, lacking a clear and coherent plan for its development. Had the MIT campus had a strong sense of identity and coherence, the architects who built MIT's buildings over the last 60 years would have had little choice but to respect history and tradition. Unfortunately, the lack of a coherent plan of development continues to be interpreted by those architects as a *carte blanche*, the resultant of which are "signature" buildings that decorate the covers of architectural magazines, but when viewed in their context, they reflect individualism at the high price of the greatly needed campus unity. This unplanned development is still continuing in full force, and one can point to the most recent architectural additions to our campus to illustrate this ongoing problem: the new dormitory on Vassar Street has been viewed by many as an alien object that is neither appropriate nor responsible. Similar criticism is being raised against the Stata building for its eccentricity and individualism.

Building on my work from the Urban Design Studio (Fall of 2002) which focused on analyzing the master plan of the MIT campus and the relationship between MIT and the city of Cambridge, I have identified an area on Massachusetts Avenue, south of Central Square, as a **node** of intervention which I will use to propose a design that addresses the problem of campus identity.

Despite it having the components of a healthy street - residences, offices, and commercial buildings - MIT's Mass Ave (south of Central Square) is fragmented and lacks what is needed to make it a memorable place. I believe that a sensible design will transform this node into the catalyst for the area that surrounds it.

Ideas for the proposed building:

To create a center for MIT, where a rich and varied program of Arts and Cultural events will flourish: museums of arts and sciences, libraries as well as places of social and professional interactions, open spaces and enclosed spaces... a variety of strong self-supporting programs that transform the space into a Place for the community.

Methodology:

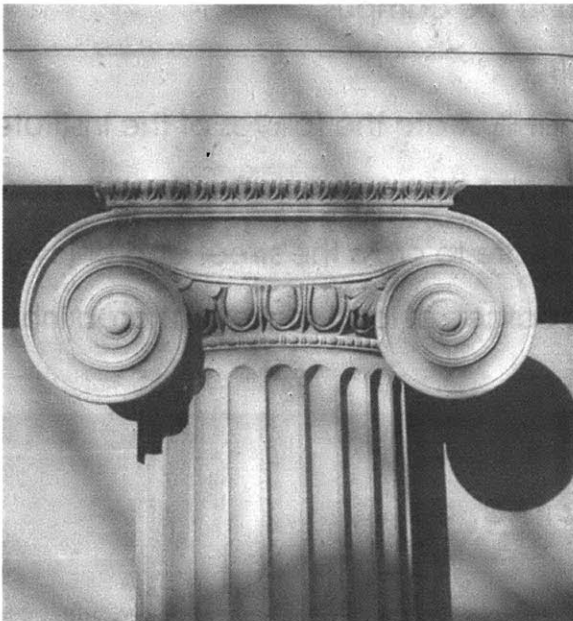
I started this project with two motives: on the one hand, I wanted to address the issue of Identity which I experienced on a personal level as an MIT student. On the other hand, I wanted to design a music hall. I knew little if anything at all about concert halls, their design, and their acoustics. I wanted to learn, and I saw in my thesis project the opportunity to satisfy this need: my proposal for a cultural center for MIT will satisfy both issues.

I divided the semester into two, and spent the first half working on a design for the Nexus as a whole. Once I got the approval from my review committee that the design was satisfactory in achieving the outlined goals, I eagerly proceeded to the design of the MIT Music Hall.

The hall quickly evolved with its own identity; nonetheless, the strength of the Nexus allowed me the freedom of design expression while remaining respectful to the surrounding context.

The steps of the design process were as follows:

- 1- Define a problem and propose a program for the solution.
- 2- Schematic design of the site, with all the elements of the program.
- 3- A refined design of the complex, satisfying the requirements outlined at the beginning, and providing the framework for the design of the concert hall.
- 4- Focus on the design of the concert hall, with acoustical and circulation issues taken into consideration.



1.0 The Nexus at MIT: a proposal for establishing a socio-cultural center at the Massachusetts Institute of Technology.

The Harvard Square area, full of life and activities, commercial as well as cultural, is a place where people from all backgrounds and ages gather and socialize on a daily basis. In contrast, the area that surrounds the MIT campus is devoid of any sort of vitality or interaction between city and University. In fact, one need not venture far from MIT to experience the poor urban quality that surrounds it: wide expanses of voids and broken sidewalks greet pedestrians as they walk around the campus.

There are many missed opportunities around the MIT campus that illustrate the failures of the Institute to capitalize on its surroundings. To its south, the Charles River offers a serene promenade along its banks; unfortunately, the traffic conditions on Memorial drive make it unsafe to cross the street and enjoy it. To the north, the railroad tracks and the darkness of the undeveloped parcels of land make that area inhospitable to pedestrians.



The current conditions around the railroad tracks at the intersection with Mass Ave.

The campus stretches east and west in an incoherent way, the result being a great waste of opportunity illustrated by the many inconveniences that face the students who cross the campus from either end at the late hours of the night.

It is at the intersection of Massachusetts Avenue and the infinite corridor where one can feel the energy of the MIT students as they gather on either side of the street waiting for that all-too-familiar declaration that it is safe to cross. There, the accumulation of students creates a great energy buildup and may be the only place that announces MIT's presence to the public.



The intersection of Mass Ave and the infinite corridor is a lively place on-campus

MIT students, as observed by architect Charles Correa, are always "scurrying around". They are moving fast, looking down at their feet, seemingly unaware of their surroundings. One may take this notion to suggest

that this is in the character of the students of this institution who are too busy to enjoy life outside of their research labs.

I would like to counter this assumption. I strongly feel that the reason why the students look down at their feet while walking is because they are surrounded by ugly scenes, not to mention the broken sidewalks that could be a trip hazard to many. Moreover, speed-walking, in my opinion, is a reflection of the lack of a sense of security in many areas around campus, especially after dark. To verify this assumption, I observed an experimental night trip with students walking from 77 Massachusetts Avenue to the Redline T-stop at Central Square. This illustrated that the subject will walk faster during the first half of the distance, from 77 Mass Ave to the intersection of Mass and Main Street.



The current conditions of the sidewalks at Mass Ave around the MIT campus are deplorable.

This portion of the route is characterized by broken sidewalks, dark conditions, mostly undeveloped lots of land, and run-down buildings.

In contrast, once the subject crosses the Main Street intersection, the street becomes alive with lights and noise generated by the pedestrian traffic. The eyes of the subject lift to observe the activities and the bustle. There is a much greater sense of safety in this lively section of the route.



The buildings provide a strong street edge and enhance the quality of the sidewalk at Central Square.

One should infer from this experiment that it is the place that affects the people, causing them to act in a certain way, and not the other way around.

A prime example is the great sense of isolation that surrounds MIT and separates it from the rest of its surrounding community of south Cambridge. This isolation has increased over the decades of MIT's existence in Cambridge, despite of, or maybe because of, the growth of the campus itself. It was surprising to read the following statement by the MIT Planning Office published in 2000, which claims:

The [planning] Office's long history of accomplishments can be measured not only by the plan it created to guide campus growth from four million to nine million square feet, but also by the thoughtful and coherent plans and policy initiatives it shaped for MIT's internal and external needs. Today, handsome buildings and green spaces now occupy large areas of the campus that were parking lots and archaic industrial buildings in 1960.

(O.R. Simha, MIT Campus Planning: 1960-2000; MIT; 2000).

It may be true, according to this statement, that a great deal of work has been done in the last 40 years. Nonetheless, there still remains a great deal more to accomplish. Furthermore, it is not the quantity, but rather it is the quality of the work that matters; i.e. well designed and carefully thought out planning, with a strong and clear vision is essential in order to fully achieve a livable campus worthy of our University.

To the world that surrounds it, MIT currently stands unnoticed, as if shrouded with a great cloak of invisibility. Many passers by, whether walking or driving down Massachusetts Avenue, from or toward Boston, are unable to notice the presence of the institution, despite its great neo-classical monumental entrance.

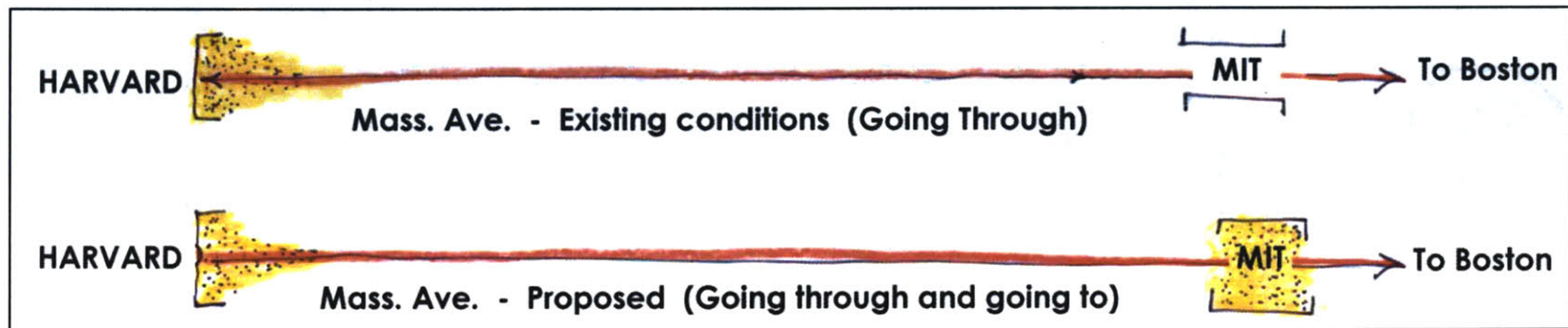


Diagram comparing the conditions at MIT and Harvard, as they exist, and as proposed in this thesis - (Aserejes, 2002)

Additionally, visitors who arrive by the subway at the Kendall / MIT stop find no trace or indication whatsoever of where MIT is. It is as though there are non-existent walls that surround our campus, keeping it hidden from the non-initiated people of the world. Only after one passes through the medical building is there a positive sign of a campus: an archway frames the main dome, announcing to the visitor that he or she has indeed entered the University.



Upon exiting the Kendal/MIT T-stop, there is no visible clue to MIT. Only after passage through the Medical building is there a sign of a campus.

Within those non-existent walls, a great vibrancy of life flourishes inside MIT, driven by the power of the young innovative minds of the students. MIT is an introverted experience. It is an astounding, yet mysterious, place to the outside world, a world aware of MIT as a top technology school, but oblivious to MIT's many other hidden talents. This is especially true in the areas of visual and performing arts.

The notion that universities have always been essential to the social, economic, and cultural vitality of their host cities, in the same way as academic qualities of universities profit from their vital urban environment, is important to consider when examining the state of the MIT campus and its surroundings.

For example, MIT has maintained a strong reputation among its competitors as the home for top notch students and researchers. This is despite a poor quality of life on and around its campus. One good example is the high cost of living in Cambridge and nearby Boston. Although recent studies have demonstrated that the main priority of graduate and post-doc students when choosing a university is the cost of living, as well as the quality of life, unfortunately, the quality of life around the MIT campus does not match the price that must be paid.

Another important aspect of a good quality of life is “connectivity.” In today’s world, it is connectivity that leads to creativity and leadership in the arts and especially in the field of sciences. People involved in research and development rely on informal and formal communication exchanges, and the flow of information with their colleagues. Because of MIT’s isolation, many channels of exchange are lacking. Those encounters at the local pub, or during the intermission at the music hall, have become key channels through which exchange of information can take place on a daily basis. These are missing in the MIT culture.

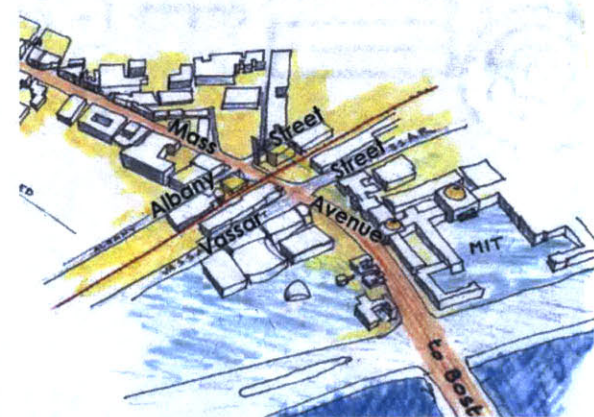
In my thesis, I suggest a way that MIT can very easily make these valuable connections: By investing in a rich program of cultural and casual entertainment, housed in a proposed urban center, MIT can contribute to the improvement of the quality of life of its hometown, Cambridge. Such investment will no doubt return great profit to the institute, in the form of the best researchers and graduate students who will continue to be drawn to MIT, but will now have even more convincing reasons to live in the City of Cambridge.

In order for such an endeavor to succeed, place and program become essential to ensure continuing vitality. Fortunately, as stated earlier, MIT is home to great cultural and artistic talents. These gifts are currently sheltered deep within its campus. It would be a terrific opportunity to showcase these talents at a place where they can be enjoyed by more than just some of the students. Such a place will act as a Nexus, or an interface, that will bridge the widening gap between MIT and the city of Cambridge, and help demystify the image of MIT to the world. Through the medium of arts, culture and entertainment, MIT will display to the world the variety of talents of its gifted students, long hidden within.

An examination of the history of growth of the MIT campus shows that MIT relocated its campus to Cambridge in 1916. Ever since that time, the continuous need for more space caused it to break from the original Jeffersonian scheme while expanding along the river east and west, then to the north. The growth of MIT, unfortunately, has been carried out with a lack of coherence. This Ad hoc expansion led the campus to its present fragmented condition. While a few miles north, Harvard square has evolved, becoming a contemporary pole of attraction for people of all ages and interests, MIT remains a non-place, a detractor of attention.

An opportunity to mend the rift exists in the development of a major catalyst that will bring MIT and the city together: an urban center that will redefine MIT's public image as the south pole of the city of Cambridge.

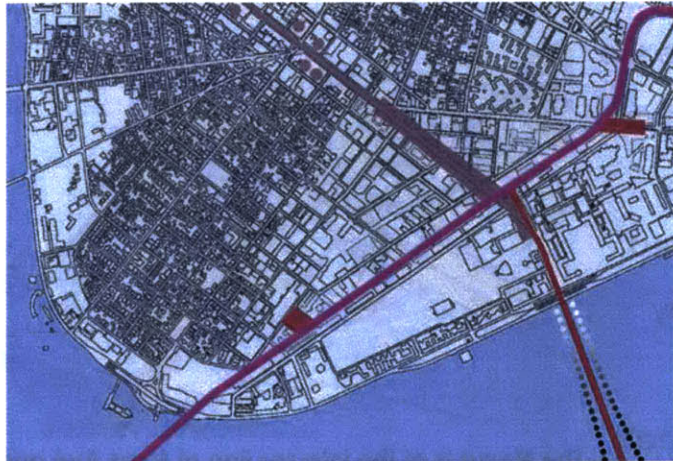
An ideal location for such a center is a site at the heart of MIT. The site is currently home to an ATM machine, and is located at the junction of two of the most important routes in Cambridge: Massachusetts Avenue running north / south, and Vassar Street, running east / west. This site is the entrance to MIT, and more importantly, the gateway to the city of Cambridge. It is a perfect place for contact, as it is naturally the place where the city meets MIT, where public life meets the institute. It is where culture and entertainment will flourish.



The Nexus is at the intersection of Mass Ave and the tracks, between Albany and Vassar Streets.

The patrons of the Nexus will come from diverse backgrounds and nationalities as is the character of MIT. They will come from different age groups, and will have different needs and destinations. The different audiences will enjoy different activities in various ways, and the Nexus will answer those needs: a variety of activities happening simultaneously. The character of this place will be related to MIT, as well as to public life, through cultural and educational activities, complemented by entertainment. The space will define the edges of the street and will provide a unique opportunity for MIT to open up its introverted yet vibrant life to the world outside.

Additionally, a public transportation node will be provided as part of the Urban Ring system which will run through the rail road corridor. This node will strengthen the intersection where the Nexus will reside, as well as



The proposed Tech Line connects BU to Charlestown.

sustain it not only as a 'place', but also as a transportation hub. This node, named the MIT stop, will activate developments in this presently dead area by bringing people from as far west as Boston University, and as far east as Charles Town.

A detailed study of this transportation system was compiled by the "Aserejes" team in the fall of 2002 (a Cambridge – MIT Institute sponsored design studio that studied the relationship between the research university and its surroundings.

For more information, see the team's final studio report, pp 44-47). The program of the Nexus will aim at maintaining high levels of both daytime, as well as night-time activities. The spaces between the buildings of the Nexus will have areas of high-level activities and interaction such as cafes, shops, and plazas. The location on both Massachusetts Avenue and on the Tech line stop will provide good commercial opportunities for the area. The program of the Nexus is based on the MIT motto "Mens Et Manus", or Mind and Hand, referring to the Institute's two areas of focus: learning and performing. It will rely on the following major components that fall under learning and doing:

Performing Arts Center:

MIT currently lacks any performance facility of adequate size. The creation of a performing arts center at the Nexus will provide an outlet for the numerous MIT talents. Musicians and dancers will be provided the spaces for both formal as well as informal performances. This center will provide the opportunity for the public to share the experience of MIT's music, dance and theater arts programs. In addition, a large music library will be provided to house the exquisite music collection that MIT currently possesses but lacks the proper place to house.



MIT Choir practice under the building 7 dome



The current MIT museum lacks prominence and visibility.

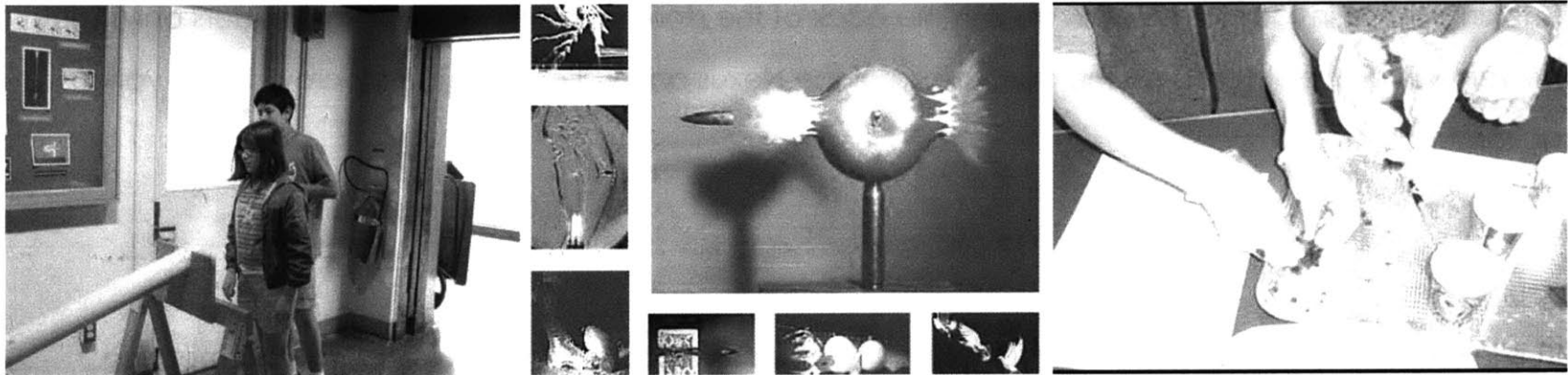
A new MIT Museum:

The current MIT museum lacks the ability to attract visitors due to its poor street exposure and its limited space. A new more spacious location at the proposed Nexus will allow a much greater opportunity for MIT to showcase its rich history of inventions and discoveries, and its innovative spirit, to the visiting public in a manner that will enlighten and excite young children about technology and the studies of sciences. The museum will house an interactive archive that will celebrate the history of MIT from its early days on the other side of the river, through its present campus, and its future outlook.

Edgerton center / outreach program extension:

In conjunction with the MIT museum, the Edgerton Center's outreach program will have a new home where it can host a greater number of children who are eager to learn using the wealth of resources available. The current Edgerton facilities are limited in space, and are hidden from the public.

An extension to the existing historic center at the Nexus will generate a place for children to meet, play and compete while learning about sciences. The center will provide an opportunity for children to challenge themselves while learning.



The various learning activities of the Edgerton Center will be a great catalyst for the Nexus. (courtesy Edgerton Center)

MIT Press Bookshop

The current MIT Press bookshop is another example of missed opportunity at MIT. It is by no means an adequate book shop. Its isolated location and meager size prevent it from becoming a place of attraction. The MIT Press bookstore, if given the proper location and size, can act as a catalyst to the Nexus, by bringing together the MIT community as well as public patrons to its facility. Adequate space between the book aisles will be provided to allow the patrons the opportunity to indulge in the great wealth of books, flipping

through the pages while looking for a good buy, without worrying about blocking the way for the other customers as is the case with the current Main Street facility. Even as these words are being written, the MIT Press bookshop is holding its very popular annual “Loading Dock” sale. In the MIT Introverted tradition, it is taking place inside a small dark area in the back of the store, and attended by the insiders only. Such an event will be celebrated on the open plaza of the Nexus and will draw to it a far crowd from various backgrounds.

Faculty club:

MIT is in need of an adequate facility for its faculty where they can have a quiet lunch, or a meeting



Photo collage showing a view from the proposed Faculty Club terrace.

with an academic or business colleague. The club will encourage chance encounter between local business leaders and the MIT faculty. Unlike MIT's current plan for a faculty dining room at the Stata center, which will be open only for lunch service, the Nexus Faculty Club will provide adequate space for lunch meetings as well as dinner events. It will not be a scanty cafeteria. Rather, the restaurant will allow for formal full dining experience, as well as a place for event celebrations.

Restaurant / Bar

A decent pub where students can go for a drink after hours is greatly needed in the area. It is often the case that a professor will want to take his or her students out after a milestone has been crossed during the semester. Unfortunately, there is no adequate place to host such celebrations on or near the MIT campus. By including a pub and a reasonably priced restaurant, the Nexus will be a great place for crowds of students and the public to meet and interact, watch a sports event, or simply wind down the day.

Plaza / Exhibition spaces:

An open plaza will be an integral part of the Nexus design. It will be a place for people to sit out and enjoy a nice day in the sun. It will host a water feature that is converted to a skating rink in the winter. The plaza will also provide a place where the food trucks are adequately accommodated. The current situation where the trucks park in front of the MIT entrance is a shameful image for such a world-renown university. There is no question that the students badly need these cheap and tasty alternatives to the food served on

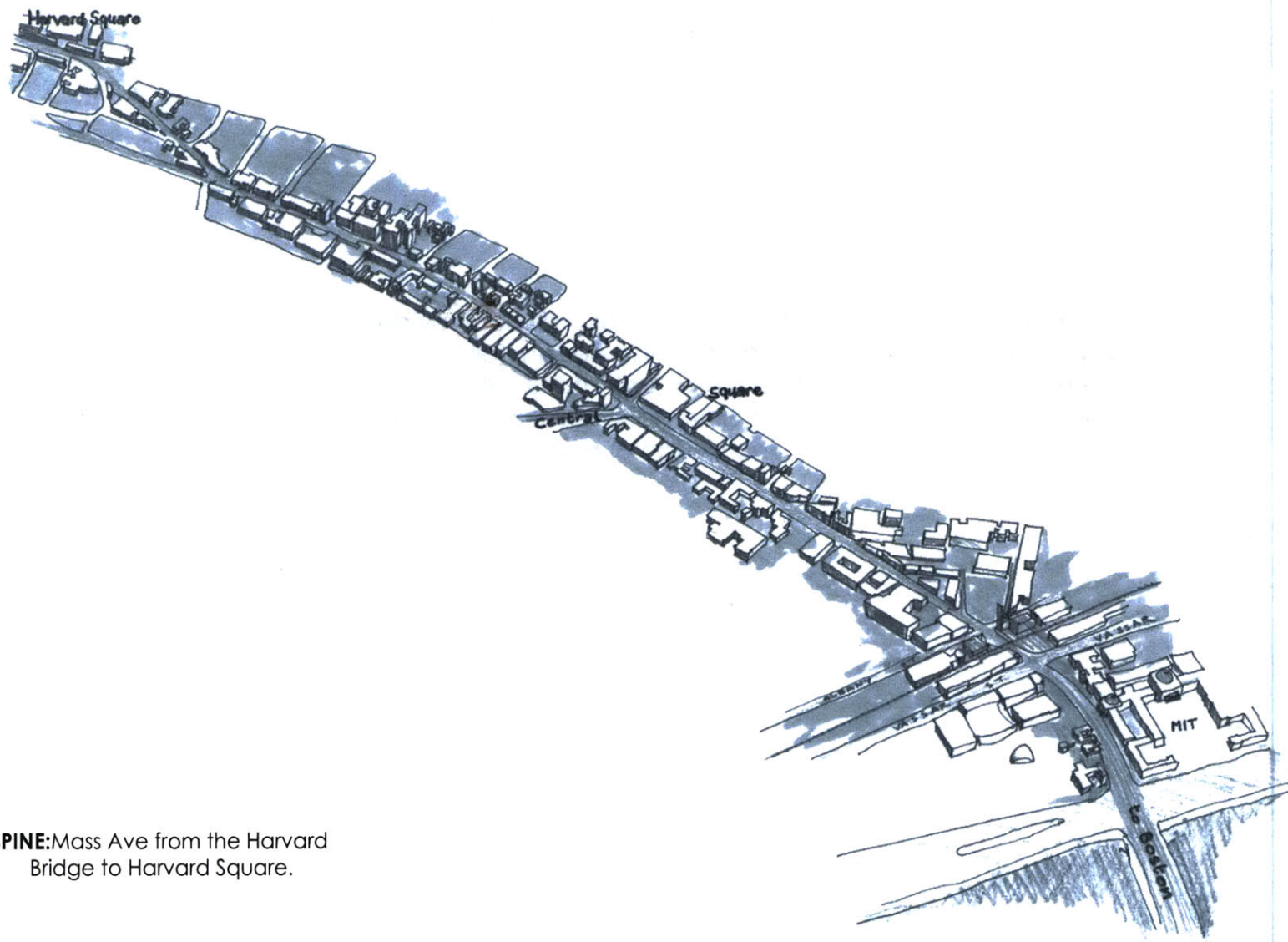


The Nexus Plaza is a place of celebration and getting together. (courtesy Foster&Partners.com)

campus. But the entrance to MIT should not be the place for these trucks. By moving them to the plaza, these food facilities will help attract the students away from the front door steps, and will seduce them into spending a refreshing lunch break at the active plaza. Primarily however, the plaza will serve as an exhibition area for various celebration events such as an annual festival, a car or boat show, a dance performance, or a Shakespearean act.

These components of the Nexus will serve both the MIT community as well as the residents of Cambridge. They will enrich the Nexus which in turn will become a catalyst that will encourage further growth and revitalization of the area. Concentrating these high-level activities in one area will guarantee its continuing success and will lead to an inevitable revitalization of this area of Cambridge which has the potential to become the public face of MIT, and the gateway into the city of Cambridge.

In the following sections of this thesis book, I present my design work for the Nexus, starting with the approach towards the design, followed by a presentation of the complex, and ending with a closer look at the design of the concert hall, which I chose to develop to a more advanced level, to satisfy my desire to learn about the design of music spaces.



THE SPINE: Mass Ave from the Harvard Bridge to Harvard Square.



2.0 Project Analysis: an examination of the existing urban conditions.



Aerial photo of the MIT campus. Massachusetts Avenue is highlighted in yellow. The proposed Tech-Line is shown in purple. (Photo courtesy MIT DUSP)

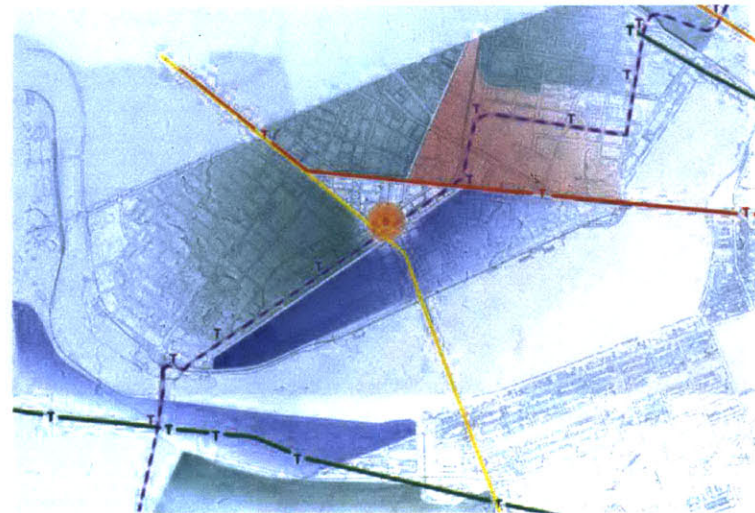
2.1 URBAN ANALYSIS: A look at MIT within its site context

The aerial image shown on the opposite page highlights the important role of Massachusetts Avenue (Mass Ave) as the spine that ties together the Metropolitan Boston area from North to South. Mass Ave runs through the MIT campus. It is important to view Mass Ave as a connector rather than a divider, for it offers MIT access and connectivity, to Boston through the Harvard Bridge, and to Cambridge via Central Square.

The site for the proposed Nexus will benefit immensely by locating it on Mass Ave. Reciprocally, Mass Ave will also benefit from a cultural hub that will act as a catalyst and will enliven commercial and residential activities along one of the worst sections of the Avenue.

Locating the site in the proximity of the future path of the Urban Ring system (referred to as the Tech Line in this thesis) will facilitate access and connectivity between the Nexus and its neighbors on the East/West axis. The intersection of Mass Ave and the Urban Ring is therefore an ideal place for the Nexus.

The following site map highlights the MIT campus (blue), and shows Mass Ave (yellow), as well as the different MBTA subway lines. It also illustrates the proposed route of the Tech Line (dashed purple). The site of the Nexus (orange) is shown at the intersection of Mass Ave and the Tech Line, at the center of the map.





← To Central Square

miracle

MIT museum



View from Central Square.



View from the Harvard Bridge.

2.2 SITE ANALYSIS: A closer look at the site selected for the Nexus



The previous section illustrated the importance of locating the Nexus at the intersection of Mass Ave and the proposed Tech Line. This section takes a closer look at the site, and examines it from eye level. The photo collage shown above and on the opposite page shows the conditions of the buildings along the western bank of Mass Ave. As described in section 1.0 of this thesis, this part of the avenue is stagnate, and in need for a catalyst to revitalize it. The site for the Nexus (shown in color) is currently greatly under-utilized. It is home to a parking lot, equipment storage, and an MIT laboratory housed in a concrete block box.

A key advantage to this site is its visibility and prominence, both from Boston, and from Central Square. The two photographs on the opposite page illustrate the visibility of the site even from a great distance.

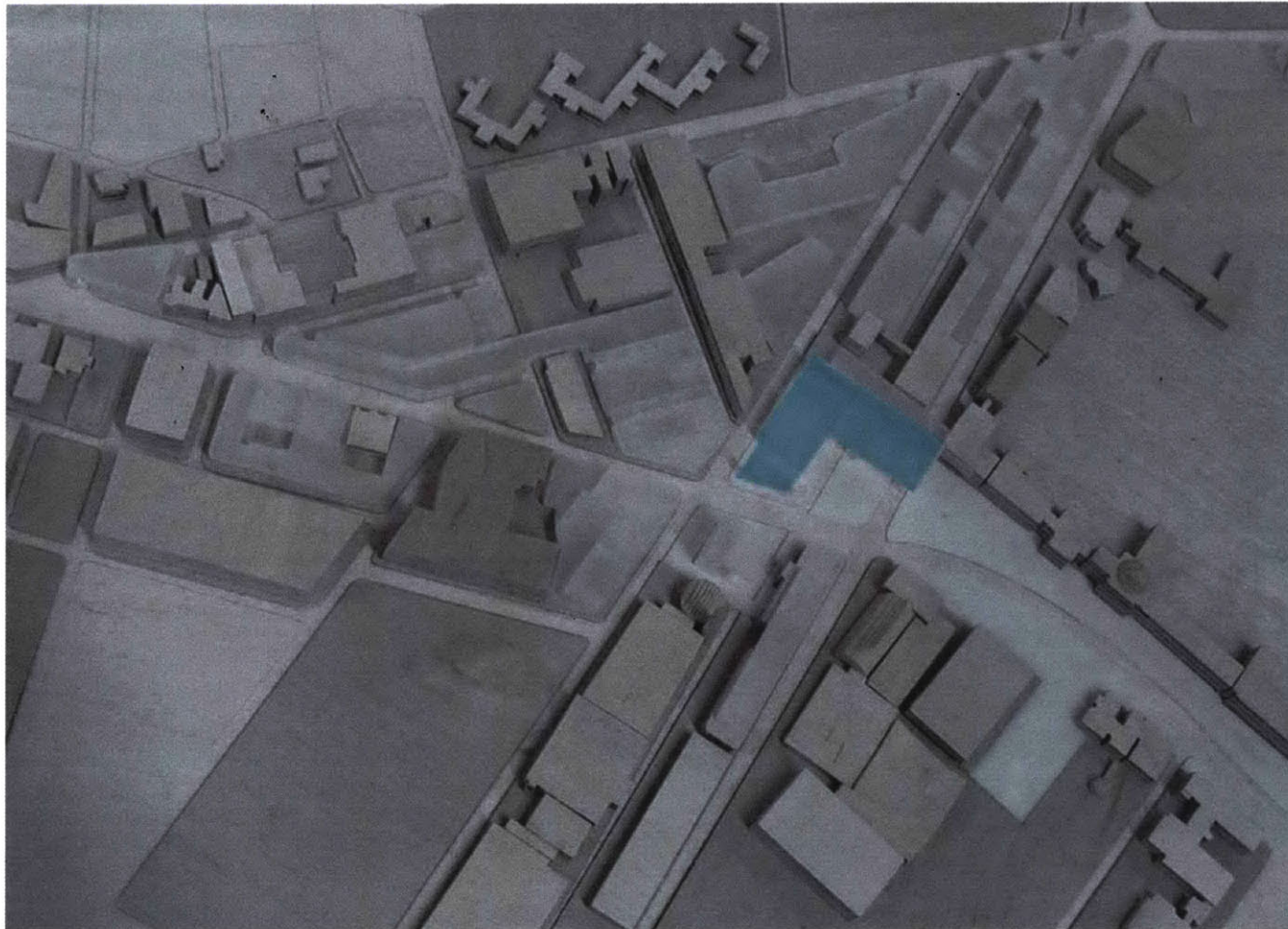
Also important about this site is the fact that it spans across the railroad tracks, which are often viewed as a psychological barrier to pedestrian traffic. Placing the Nexus at this location will form a virtual bridge over those barriers.

Equally critical to the success of the Nexus is providing easy access to it, as described in section 1.0 of this thesis. The incorporation of a Tech Line station into the design of the Nexus will facilitate connectivity via public transportation, and bring visitors from as far as Charlestown and the Boston University area.

Visibility, prominence and accessibility will play a key role in the success of the Nexus.

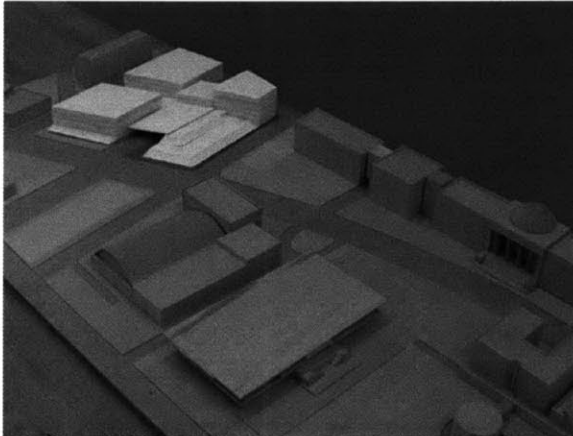


3.0 **Design Schemes:** a brief look at thought process and design evolution.

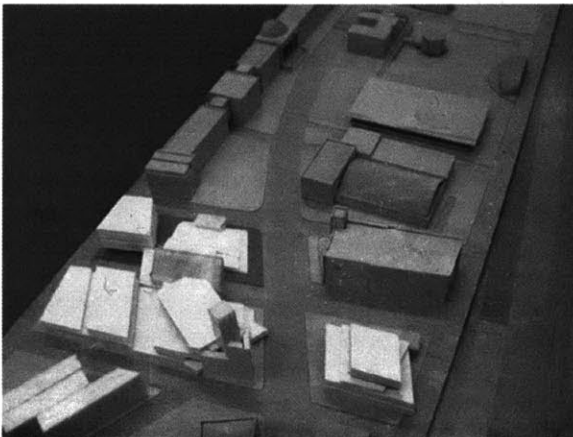


The Nexus: site model showing early massing scheme (sch-01)

3.1 Initial Design Approach: A raised plaza to span above the tracks



The Nexus: massing model (sch-01b)

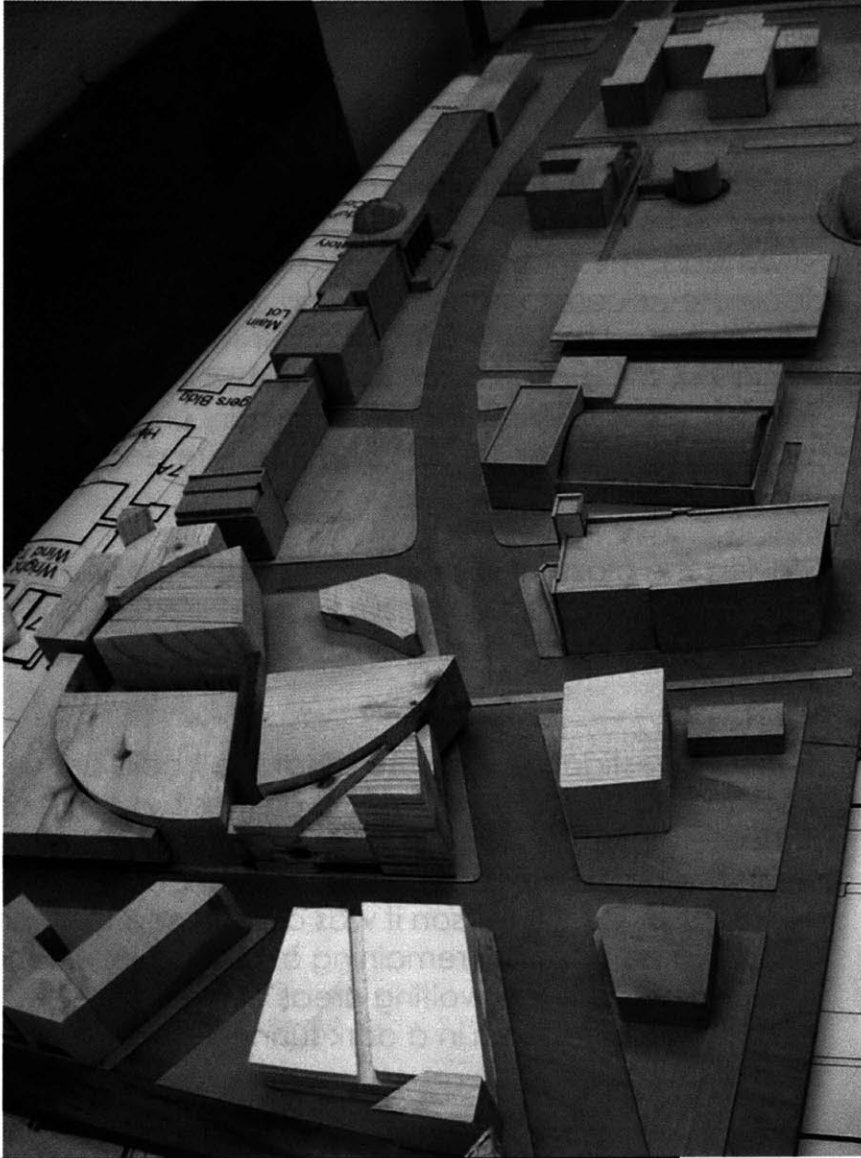


The Nexus: massing model (sch-01c)

An early idea for the design of the Nexus was to span over the tracks of the Tech Line, and create a plaza overhead. The thought was that such a move would facilitate access to the Nexus, and provide a large plaza uninterrupted by the tracks. In order to accomplish this however, the plaza had to be raised 18 feet above street level, in order to allow for the necessary clearance of the train. The photos on the left and opposite page illustrate this scheme.

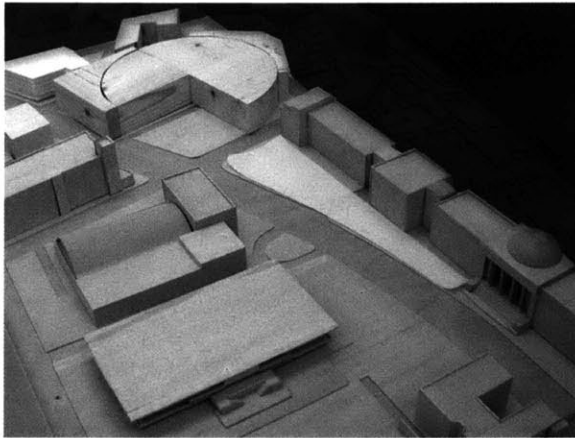
Having the plaza at such a high elevation, it became clear, would make it unusable by most pedestrians who would simply walk past it, intimidated or discouraged by its height.

Further investigation indicated that the tracks are used infrequently by the trains (only two times per day), and that the future Tech Line busses will have to slow down and stop, to pickup and drop off passengers from the Nexus stop. For this reason it was determined that the plaza will benefit from remaining at ground level, and would celebrate the waiting areas of the Tech Line, rather than hide them in a dark tunnel underneath a raised plaza.

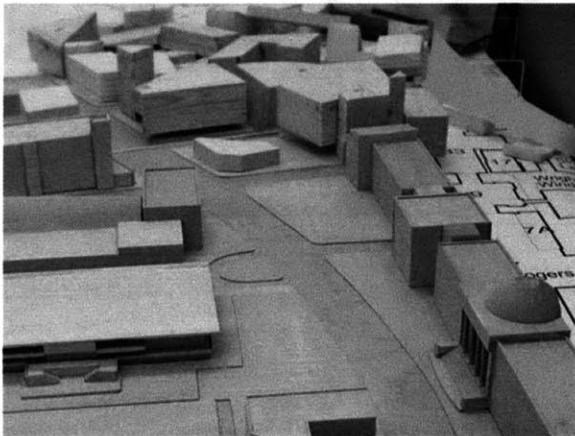


The Nexus: site model with massing (sch-04)

3.2 Final Design Strategy: A deconstructed circle



The Nexus: site model with massing (sch-03)



The Nexus: site model with massing (sch-04)

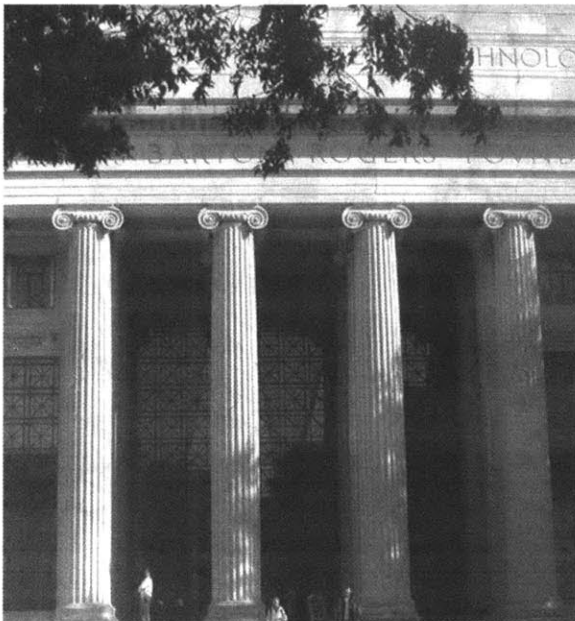
In this scheme, the Nexus is given a circular form. Once modeled and tested, the geometry of the circle proved ideal for the site. The platonic geometry of the circle fit the role of Interface that would tie together the North and South arms of Mass Ave. The circle acted as a pivot for the joints of the Avenue.

The circle was then deconstructed into four quadrants, with the Tech Line corridor passing through its center. One quadrant was removed to make room for the plaza. The others were assigned the following functions:

- Q1: Museum and learning center
- Q2: Drama Center
- Q3: Music Hall

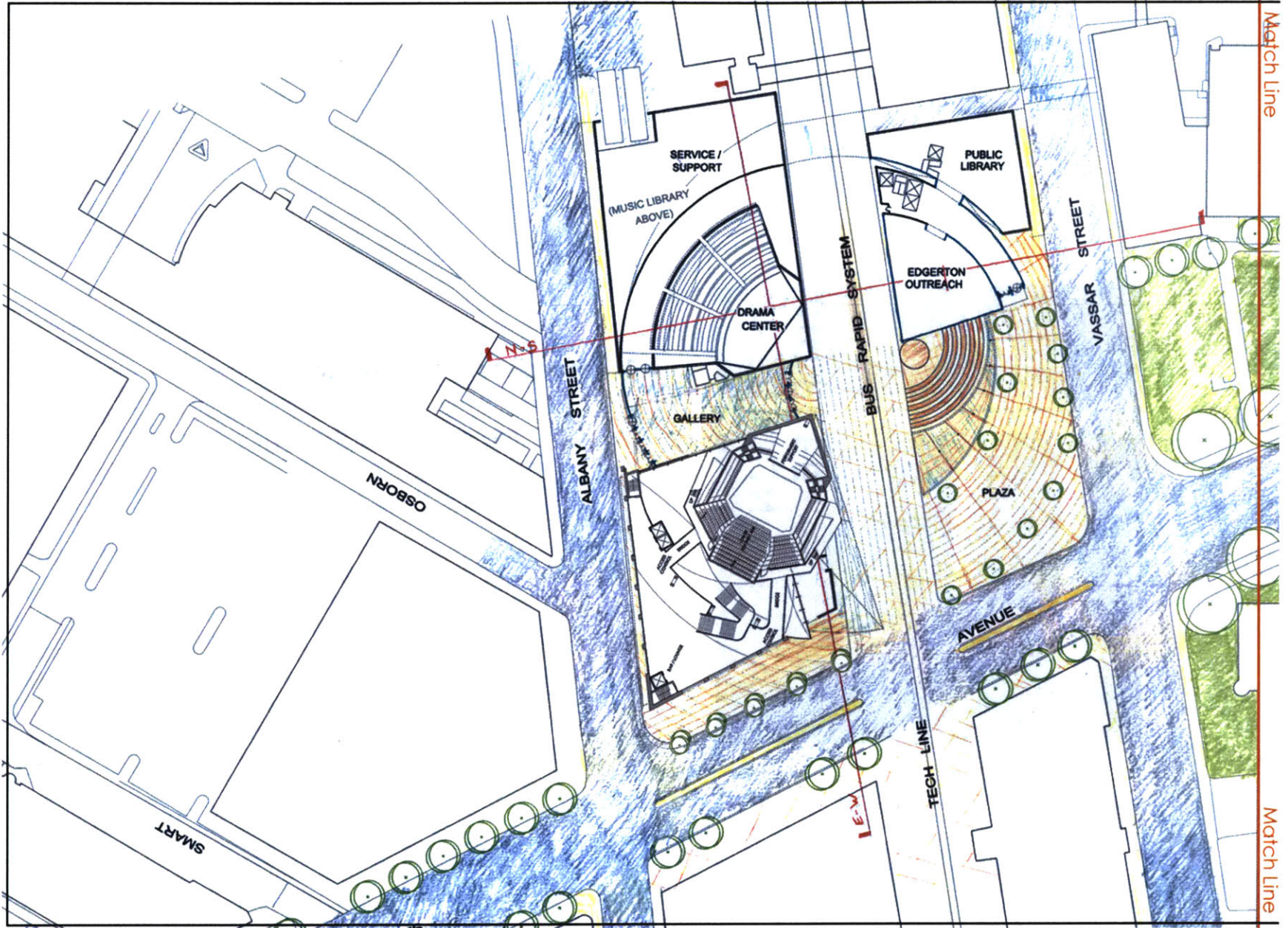
The model photos shown here illustrate the success of the circle as an initial shape for the Nexus complex. Subsequently, the quadrants began to be developed to satisfy their program requirements. Such development resulted in a morphing of the quadrants' original wedge geometries; nonetheless, the geometric strength of the circle maintained the parts unified despite the evolution of their individual shapes.

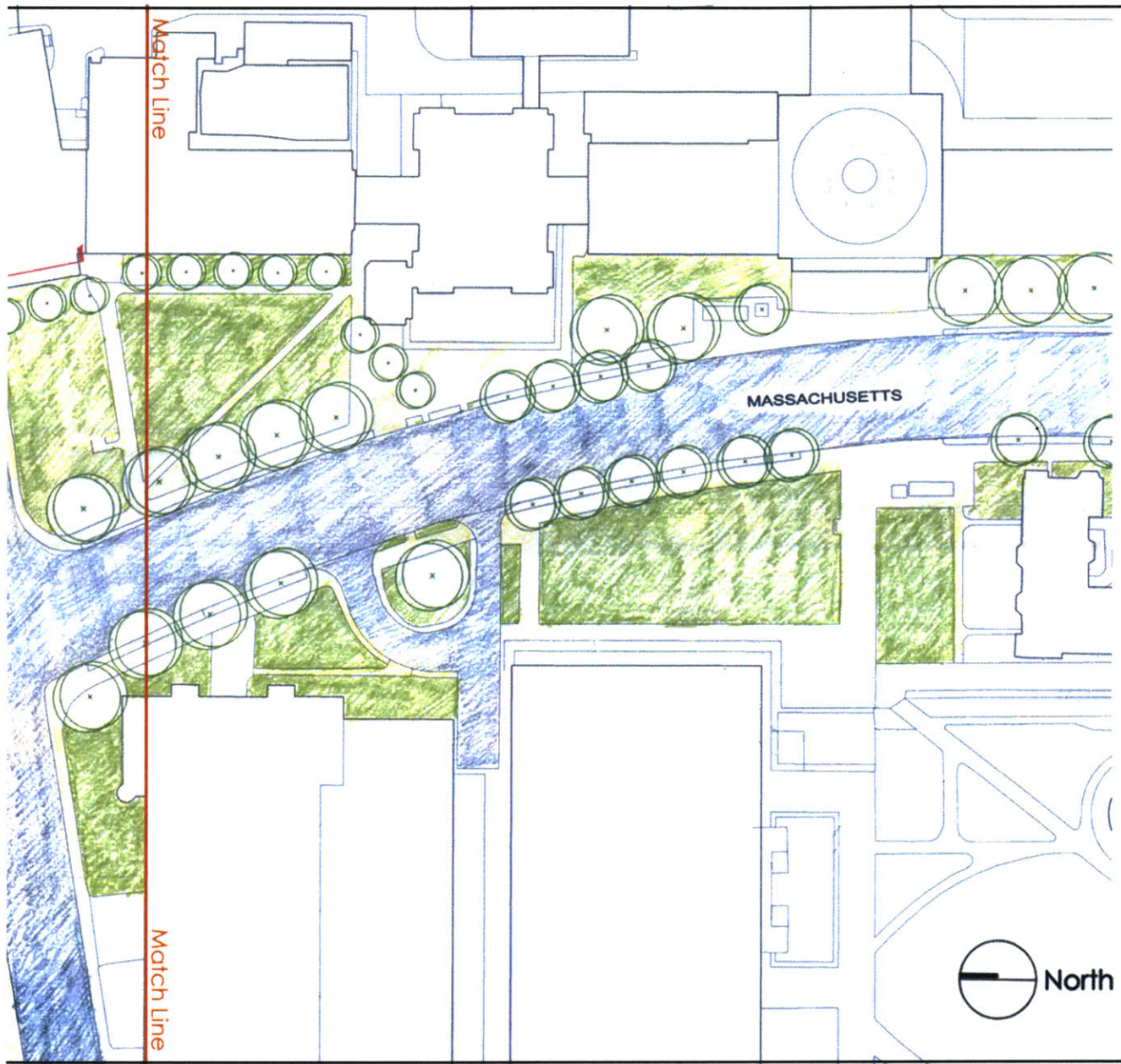




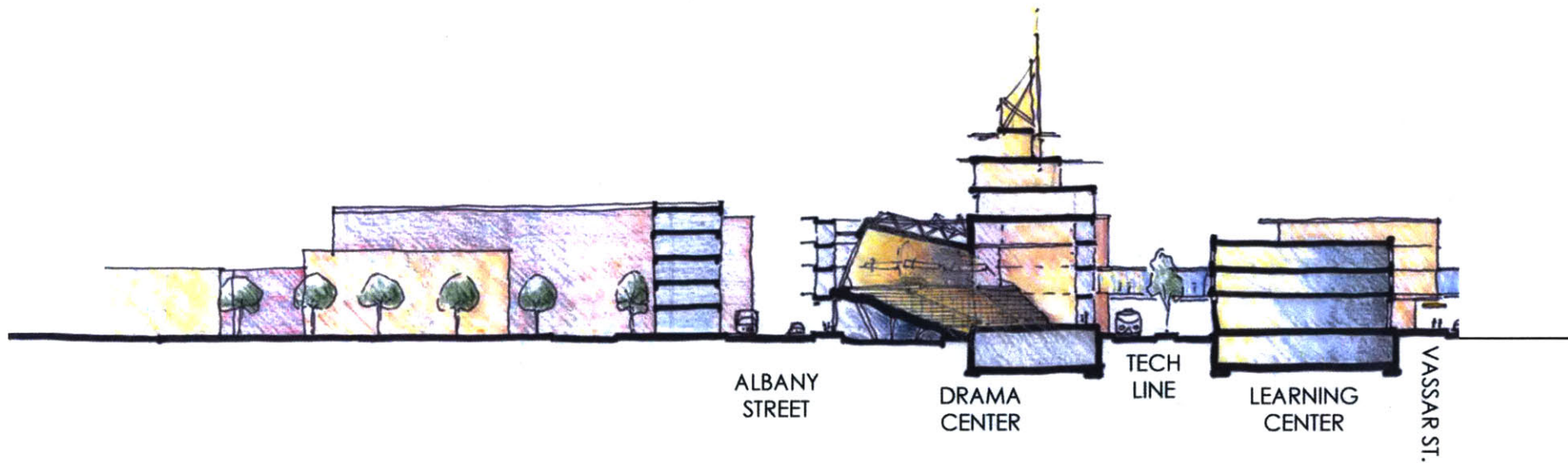
4.0 Presentation Drawings:

4.1 Nexus presentation

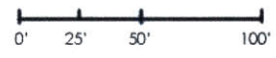




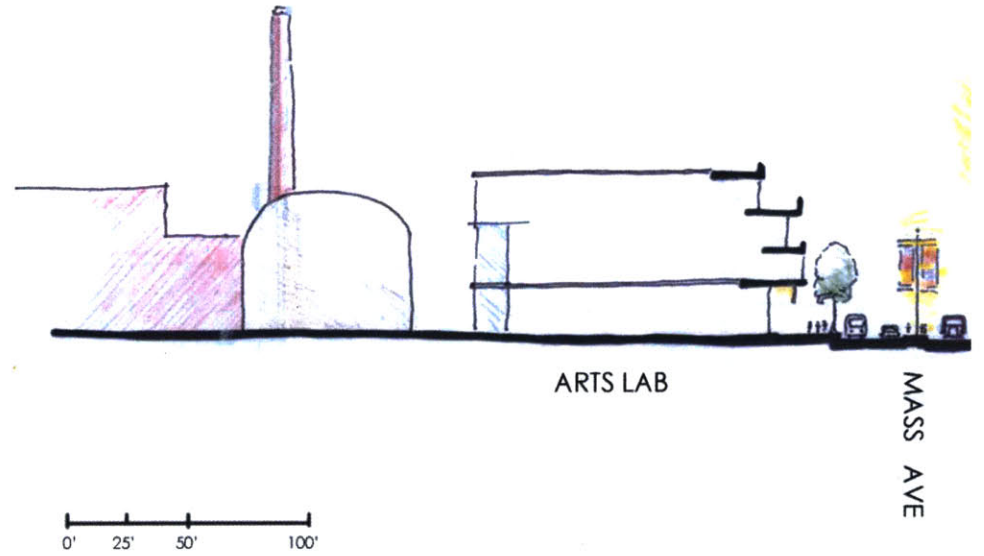
SITE PLAN
1" = 100'

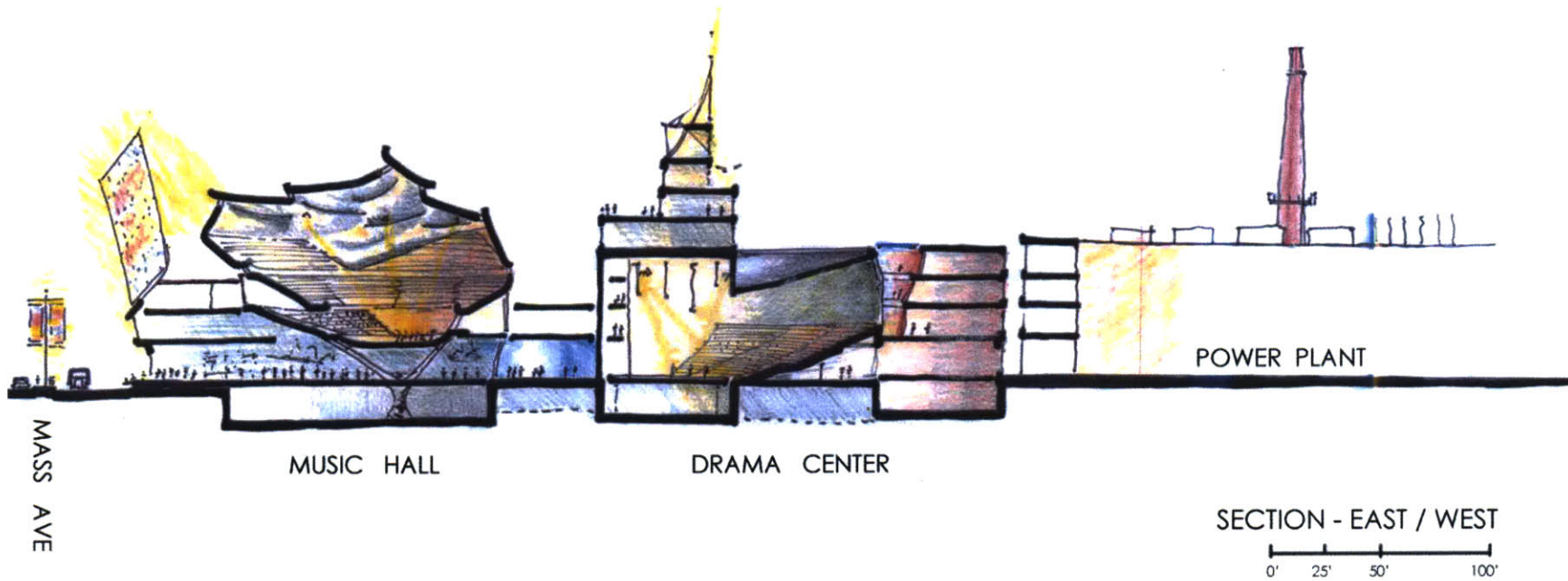


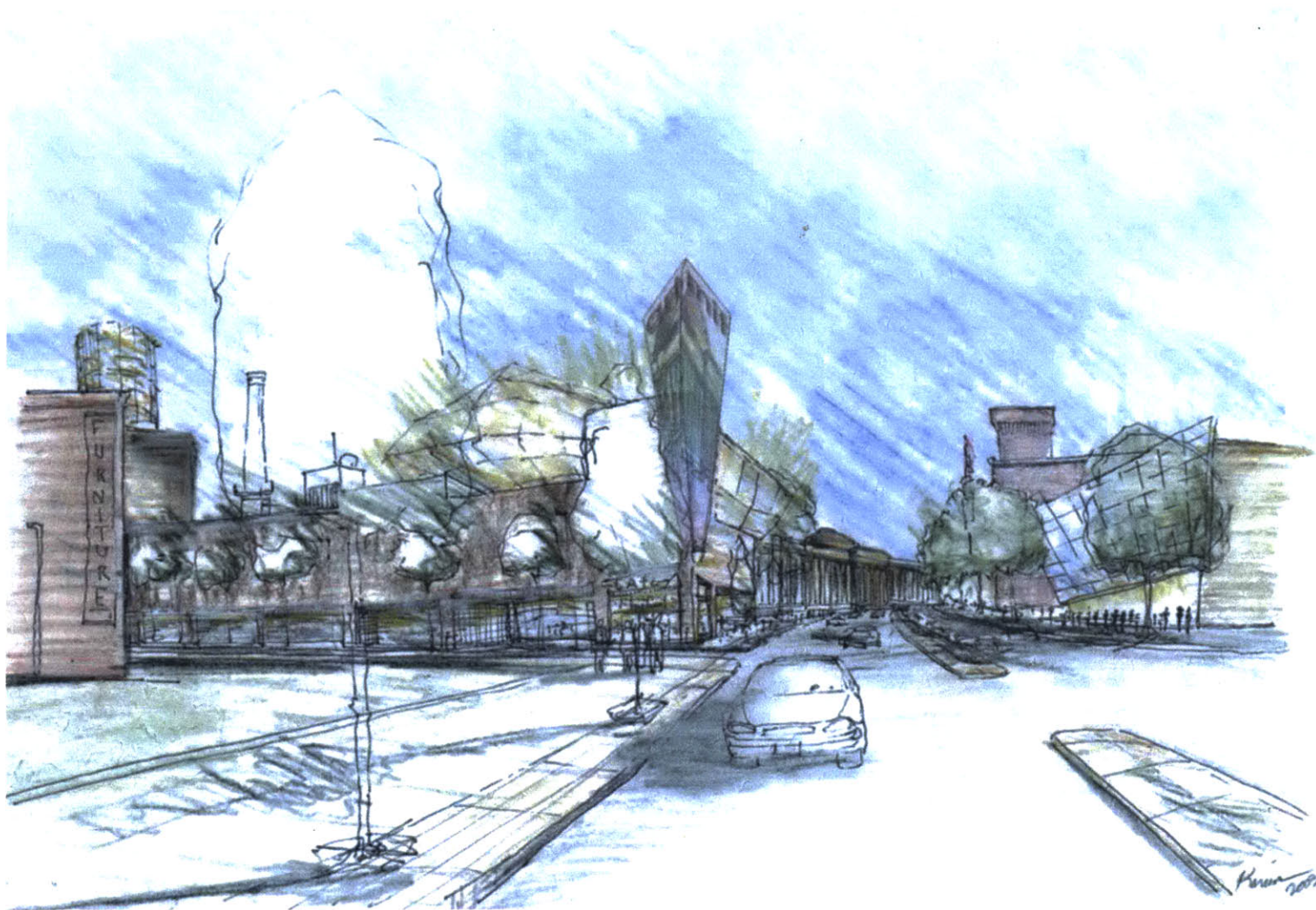
SECTION - NORTH / SOUTH







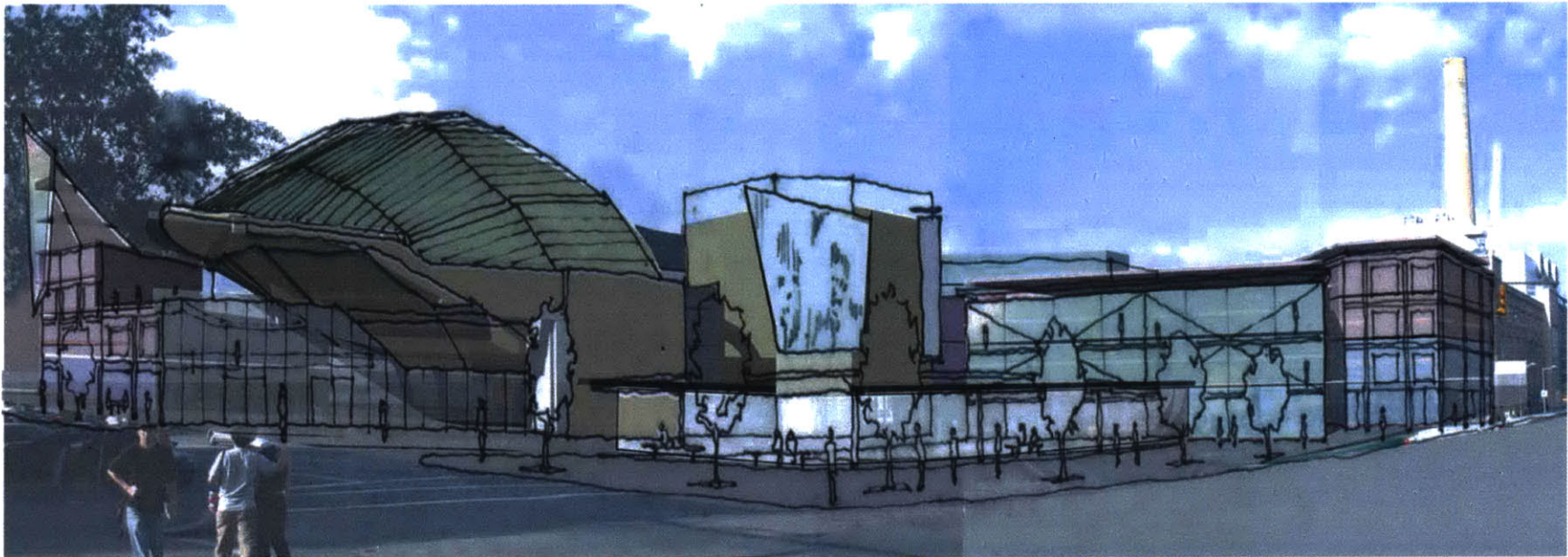




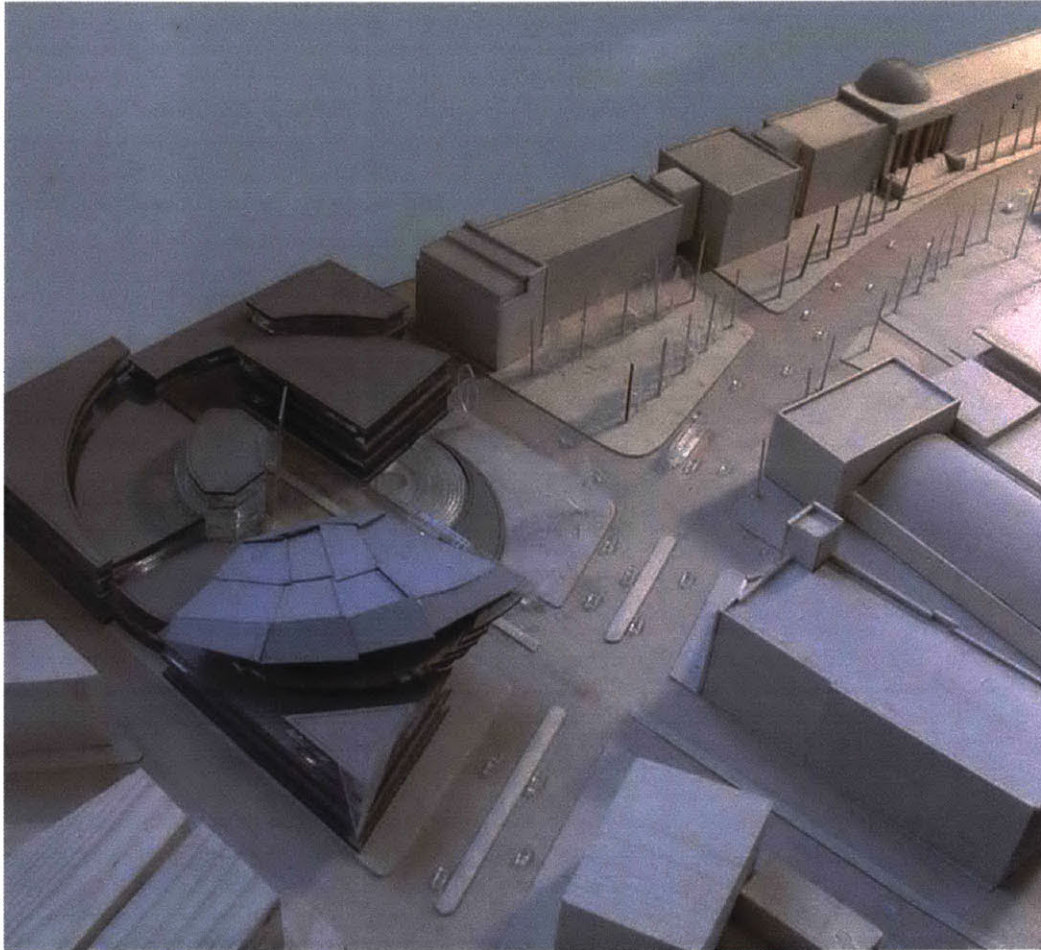
Sketch view of the Nexus from Central Square looking south towards 77-Mass-Ave.



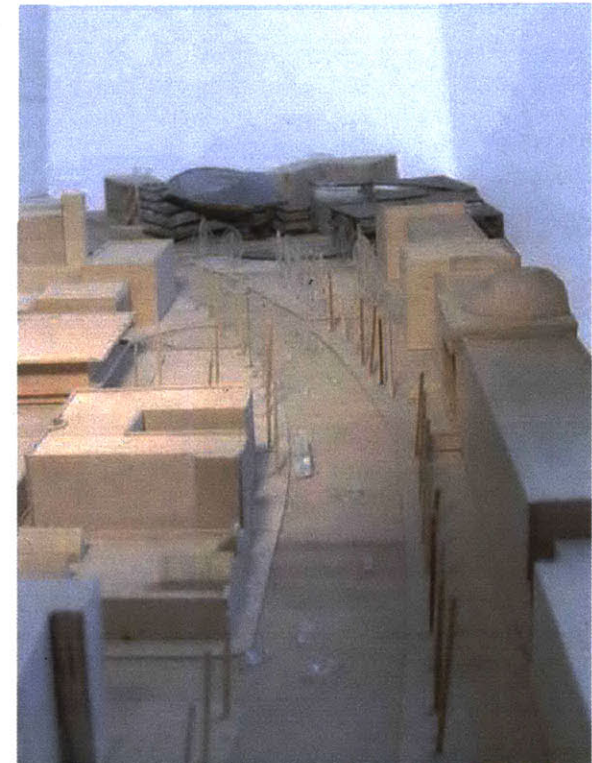
Photo-montage of the Nexus, viewed from 77-Mass-Ave, looking North towards the Metropolitan Warehouse.



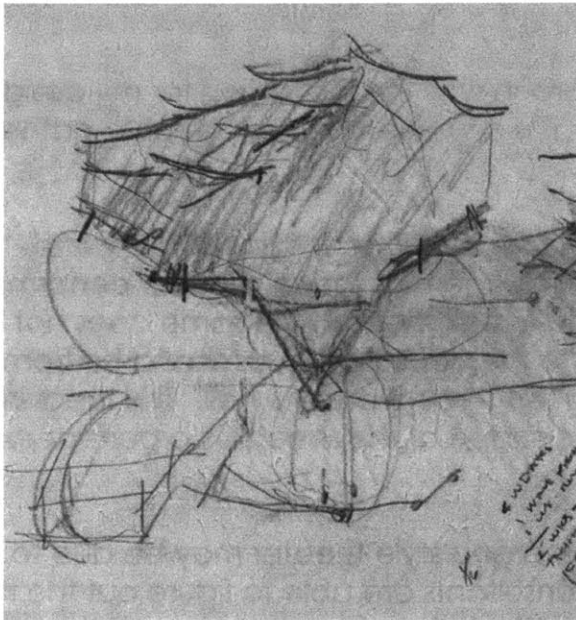
View of the Nexus from the Metropolitan Warehouse, looking East.



Photos of site model: 1- bird's eye looking south towards 77-Mass



2- bird's eye looking North, from Mem Drive.



4.0 Presentation Drawings:

4.2 MIT Music Hall

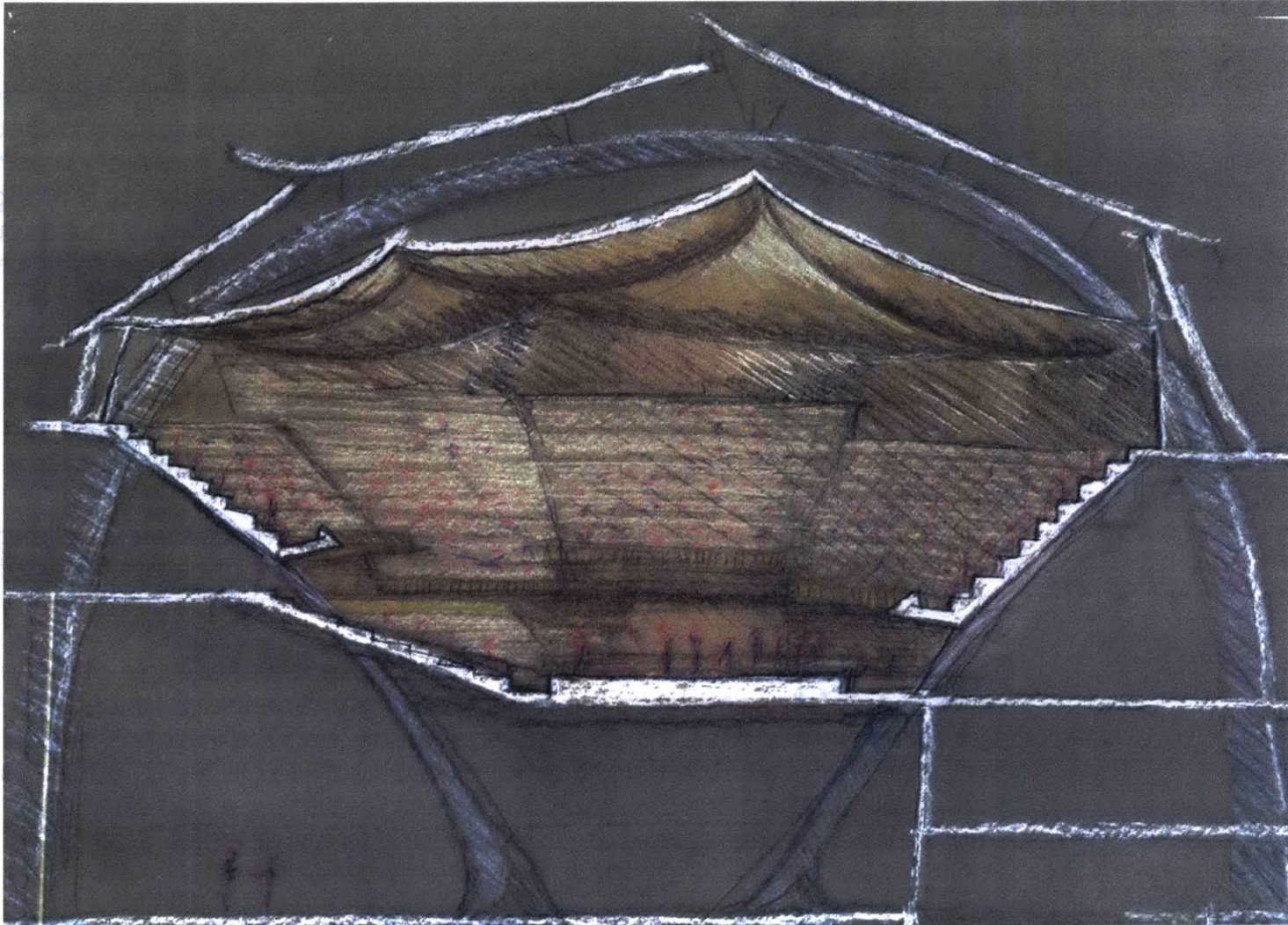
MUSIC AS THE FOCAL POINT

" The orchestra and conductor stand spatially and optically in the very "middle of things ... completely enveloped by their audience ...
No segregation of "producers" and "consumers", but rather a community of listeners grouped around an orchestra in the most natural of all seating arrangements... "
(Scharoun describes his Berlin Filharmonie).

This statement by architect Hans Scharoun was the inspiration for my design of the MIT Music Hall presented in this thesis. It is a simple concept: people gather around the music.

Acoustics consultants, however, claim that this concept has its technical drawbacks. According to them, while it is true that for an outdoor performance, the best seating arrangement is that of the Greek theater, the same does not hold true for an indoor performing center, due to the acoustics issues that arise from poor sound reflections, and uneven distribution throughout the hall. The ideal indoor space, assert the acousticians, is in the shape of the shoebox; a perfect example being the Boston Symphony Hall.

The superiority of the shoebox over the arena style theater may be due to the relative ease with which acoustical consultants are able to figure out the necessary calculations. The complexity of calculating the area and volume of the arena-style theater cause it to be dismissed as inadequate.



Concept sketch showing the suspended Music Hall.

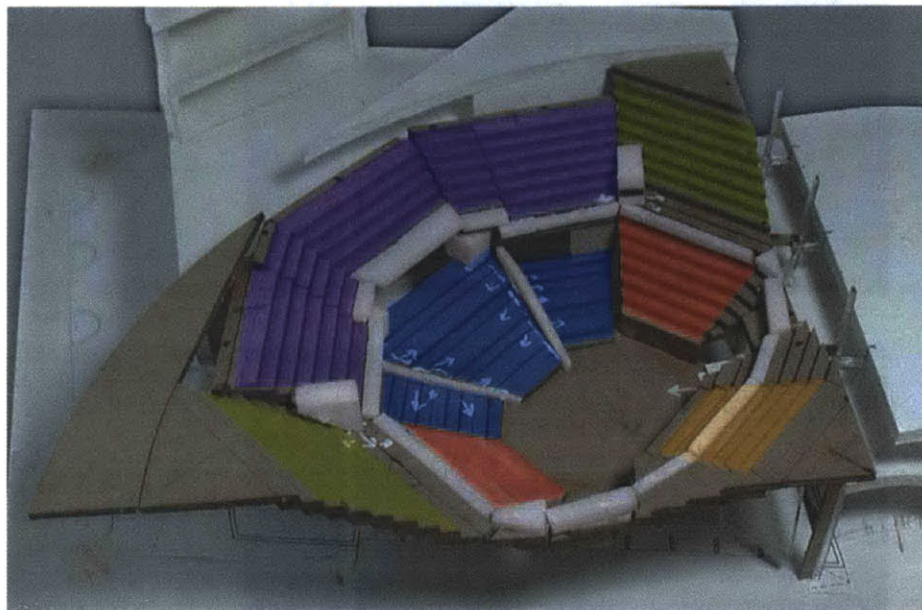
MUSIC AS THE FOCAL POINT (continued)

While acoustically preferable, the shoebox has many disadvantages, especially from a hierarchical standpoint: the majority of the audience is seated in areas that are too distant from the stage, and therefore have no visual connection with the performers. While some may argue that music is an aural experience, I strongly believe that music is above all an emotionally charged experience that should be experienced by the entire body. For example, sound emanating from the cello is more evoking to the soul when the audience is able to observe the tension in the hand movement that generated this particular note.

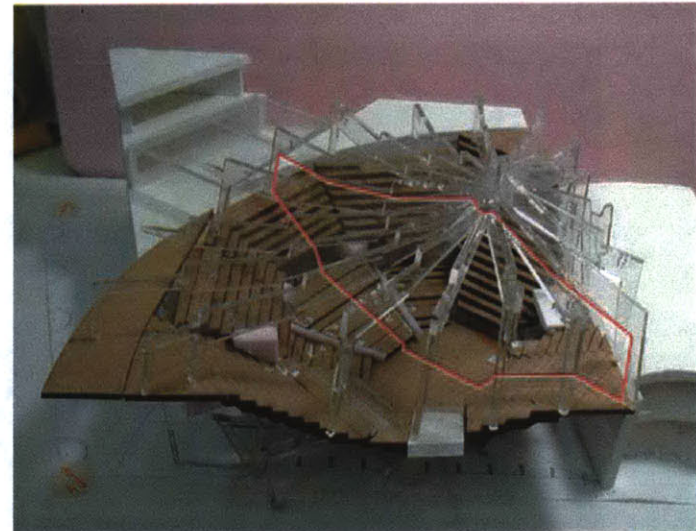
In my opinion, an arena-style music hall has the potential of offering equal or superior music quality to the shoebox theater, while allowing for the full participation of the entire audience, as long as the designer remains respectful of the physics of acoustics.

No doubt, designing an acoustically superb arena-style hall is more challenging to architects and engineers; nonetheless, with the advent of computer simulation, and testing methods, it is not by any means an unattainable goal.

In my design for the MIT Music Hall, I decided to take the challenge of the arena theater. I carefully considered the seating arrangement, the distance from the stage to the farthest seat, the shape of the ceiling, and the variation in seating arrangements. These considerations are all necessary to create a space that allows for ideal sound reverberation, and offer a music experience that envelops the audience and lifts their spirits from the mundane to the celestial.



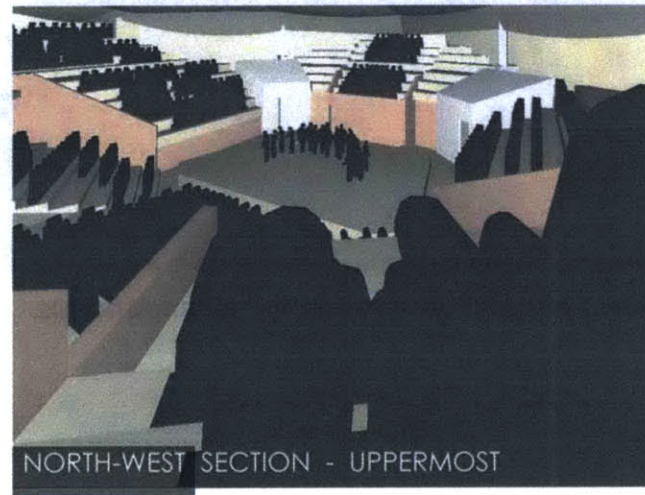
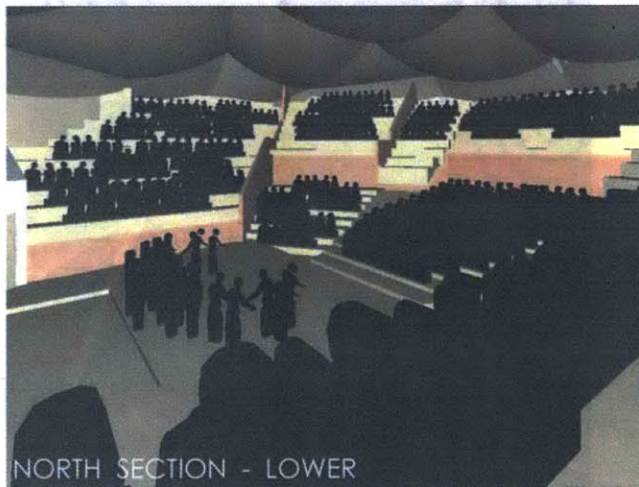
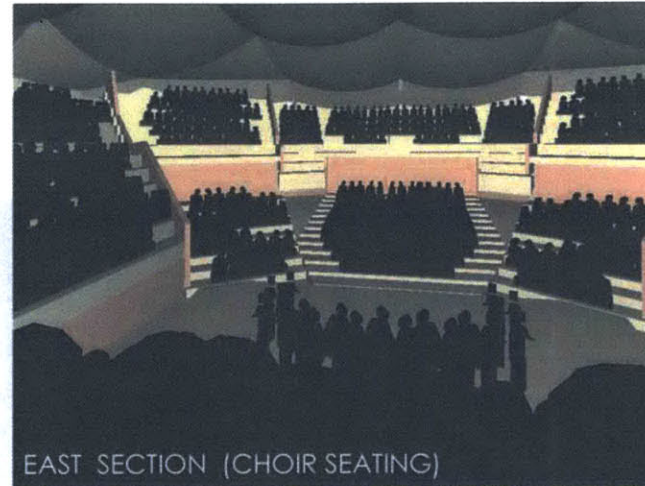
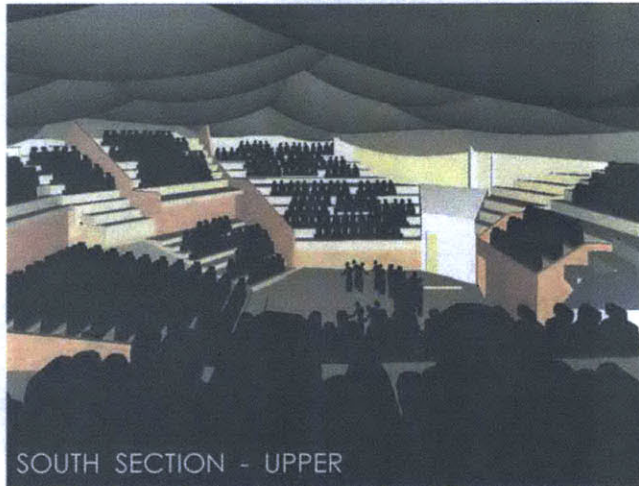
Study model showing circulation and seating arrangements.



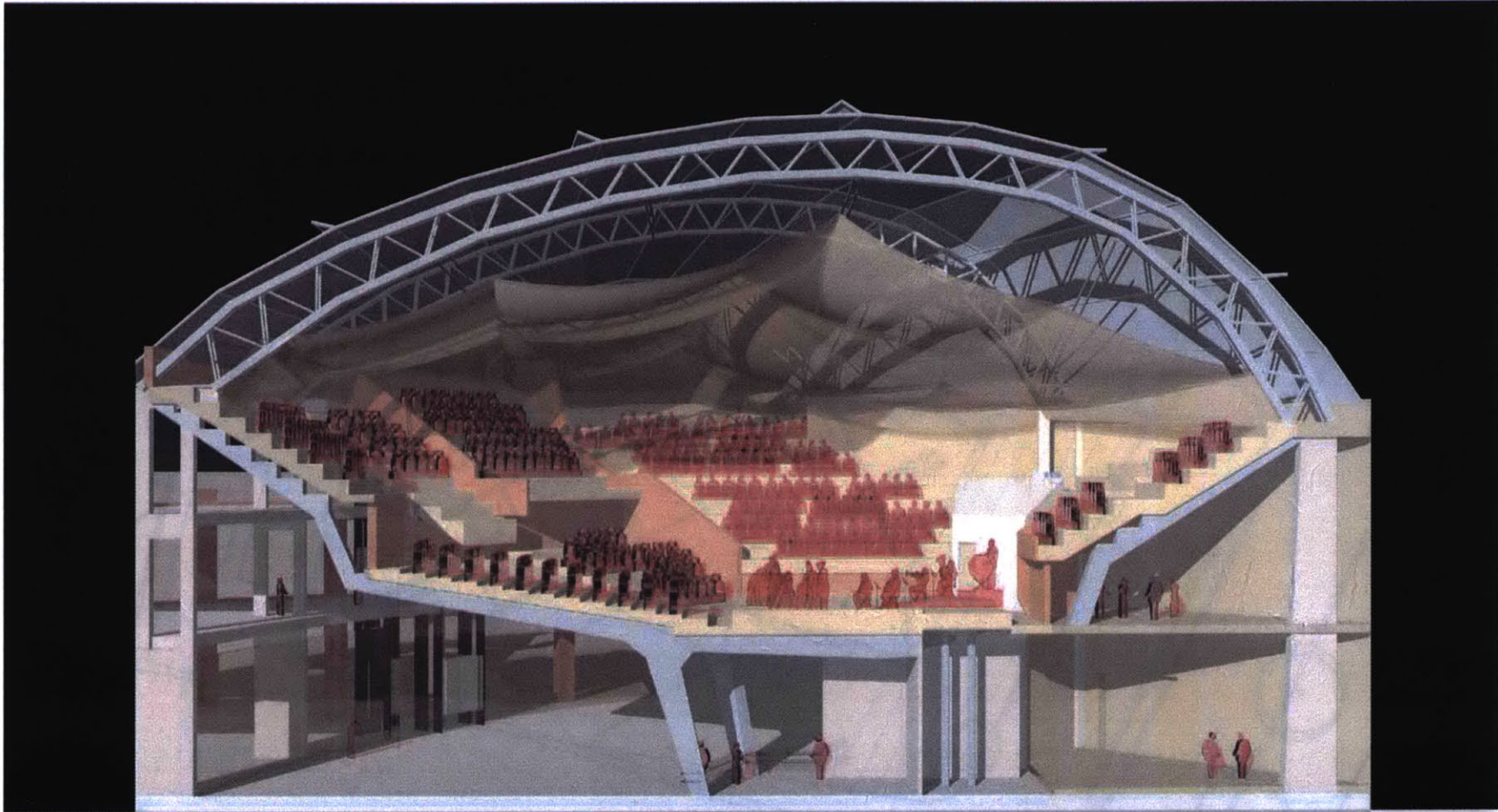
Study model showing roof structure (Sch-01)



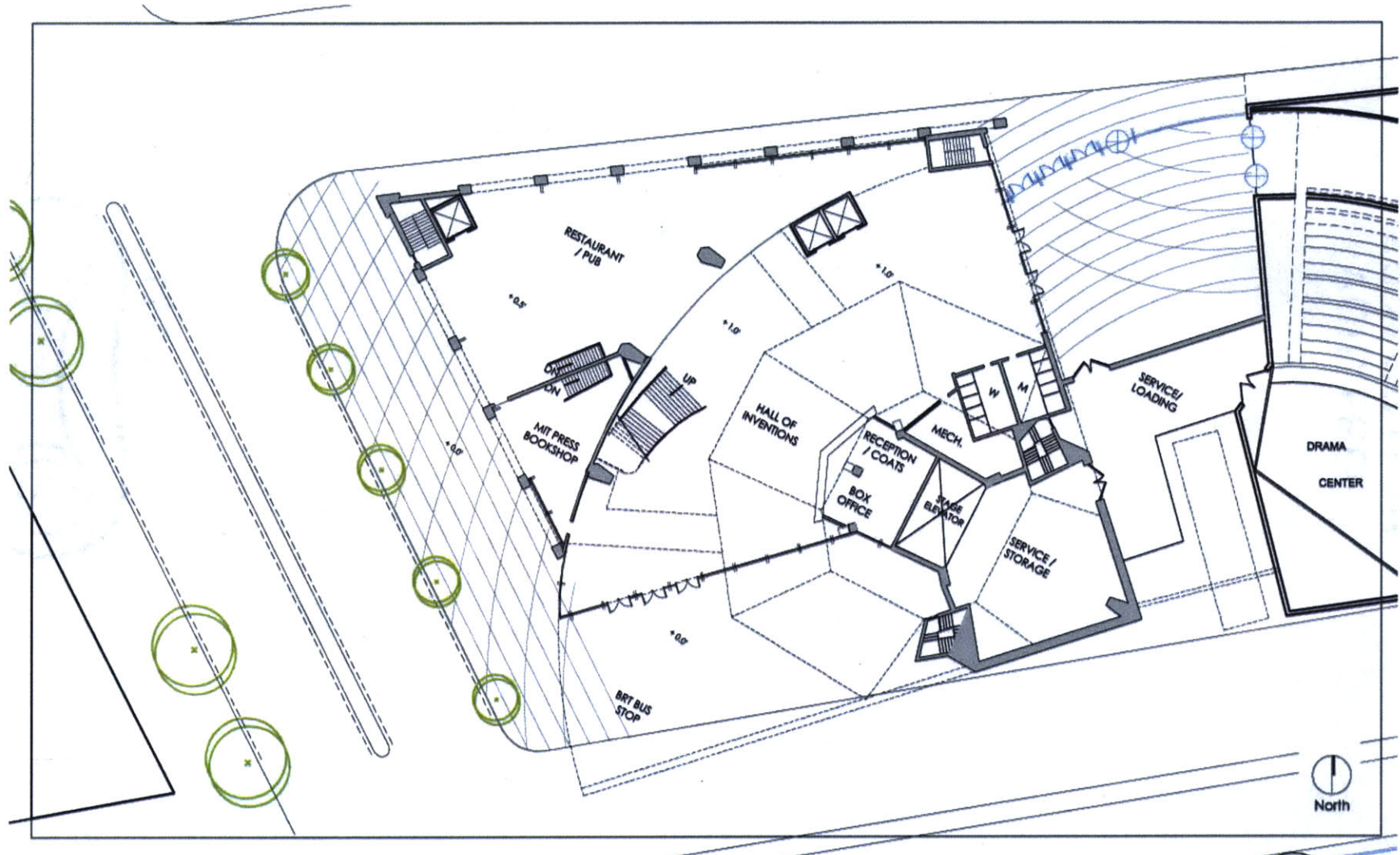
Study model showing roof structure (Sch-02)



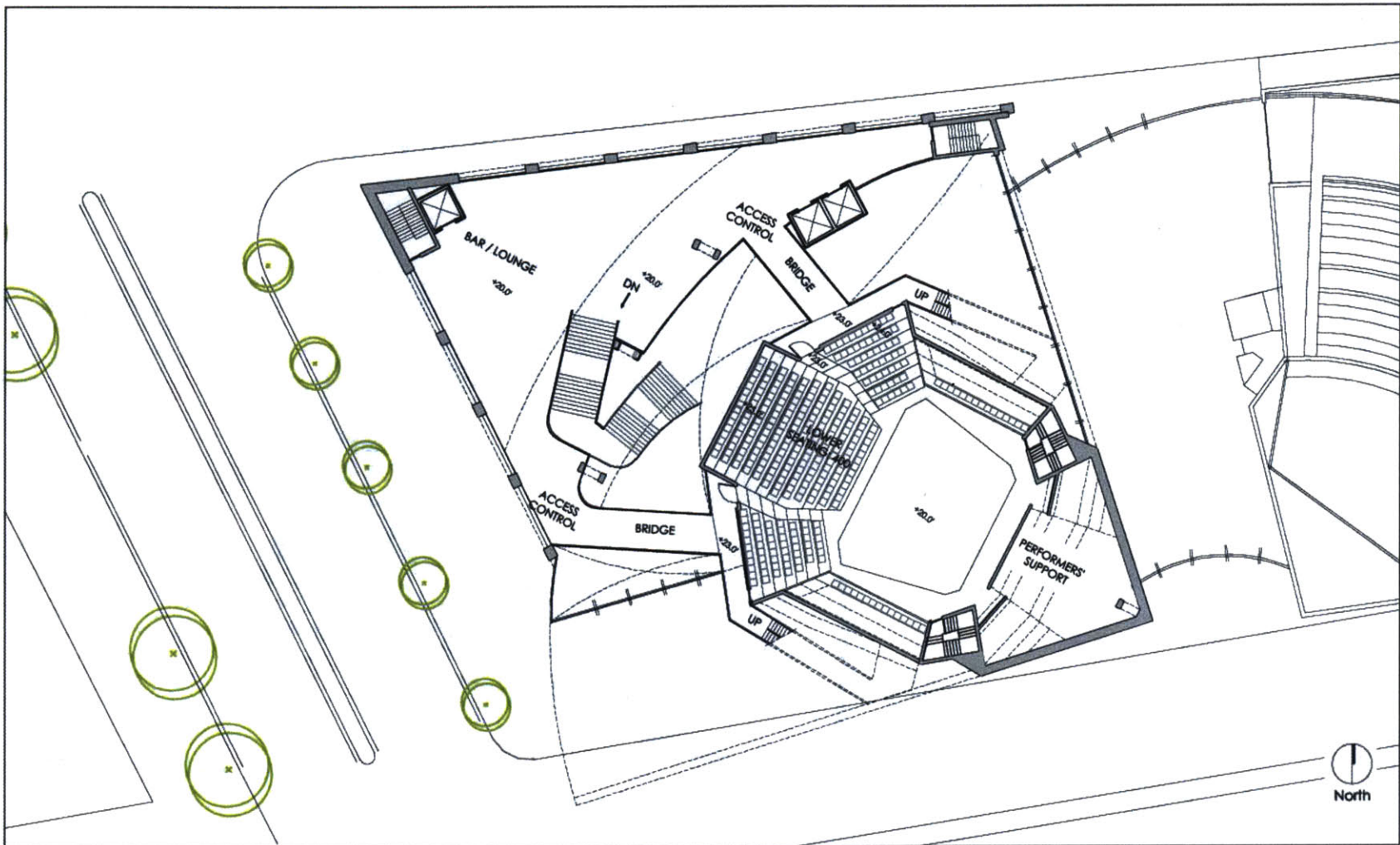
Computer-simulated views to test the seating arrangements inside the Music Hall



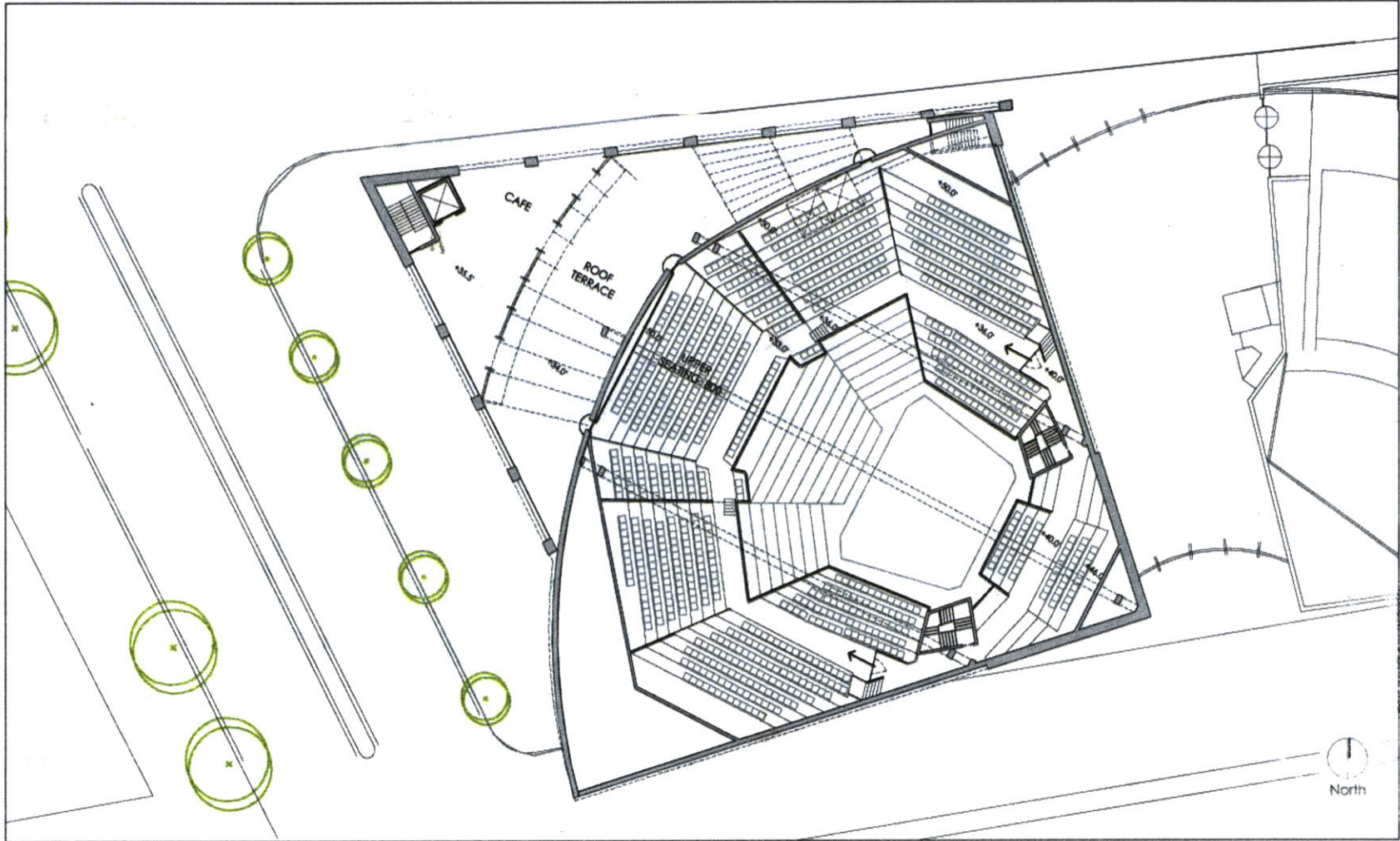
SECTION PERSPECTIVE THRU AUDITORIUM



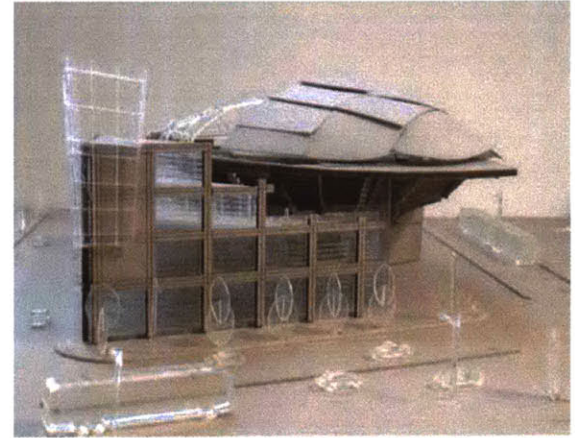
MIT Music Hall - Entrance Level Plan
Scale: 1" = 40'-0"



MIT Music Hall - Hall Main Level Plan
Scale: 1" = 40'-0"



MIT Music Hall - Hall Upper Level Plan
Scale: 1" = 40'-0"



MIT Music Hall - Final model photographs

BIBLIOGRAPHY

Barron, Michael. **Auditorium Acoustics and Architectural Design** - E&FN SPON, London, 1993

Forsyth, Michael. **Auditoria – Designing for the performing Arts** - Van Nostrand Reinhold, London, 1987

Foster, Norman - **Selected and current works of Foster and Partners** - Mulgrave, Vic - Images Publishing, London, 1997

Piano, Renzo Building Workshop - **Architecture and Music: Seven Projects** - Edizioni Lybra Immagine, Milan, 2002

Scharoun, Hans - **The Berlin Philharmonic Concert Hall, Berlin** - A.D.A. Edita, Tokio, 1973

Simha, Robert O. **MIT Campus Planning** - MIT Publishing, Cambridge, MA, 2001

Web Resources:

<http://floorplans.mit.edu>

<http://ortho.mit.edu>

<http://www.fosterandpartners.com>

<http://www.rpwf.org>



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