

MERGE:

the hybridization of architecture, infrastructure, and landscape

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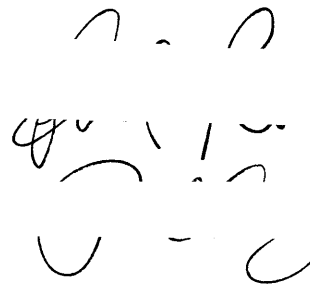
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Bachelor of Environmental Design
Texas A&M University, 1995

Submitted to the Department of Architecture in partial fulfillment of the requirements for the degree of
Master of Architecture at the Massachusetts Institute of Technology, February 2002.

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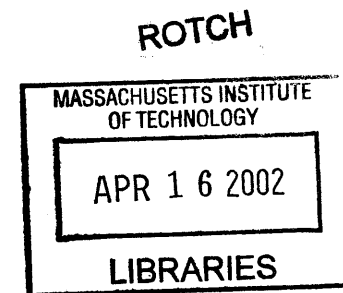


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by Ariel Manalo Fausto

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Abstract

The evolution, revitalization, and densification of many urban centers in the United States often involve the intensification of the diverse components of the city. As city centers continue to grow and continue to experience a sustained revitalization, more demand on housing, entertainment, retail, green space, and infrastructure follows and, in turn, promotes more growth. As this intensification continues, the architectures that support it begin to merge and begin to challenge notions of boundary such as the party wall separating one building program from another or the highway separating one neighborhood from another. In a dense urban center, the increasing lack of space and the increasing premium on land values often forfeit the luxury of autonomous building typologies, and quite often, disparate programs are forced to combine into the same building. Housing historically combines with commercial, and commercial often combines with entertainment in a complementary fashion; but often unexpected combinations will occur such as retail with a bridge or a church with an office building. As these combinations defy and lack any pure, nameable typology, they challenge our notions and understanding of building identity and architectural typology. Furthermore, as this lack of typology is intensified and formalized, it becomes an anti-typology and can more appropriately be referred to as a hybrid building.

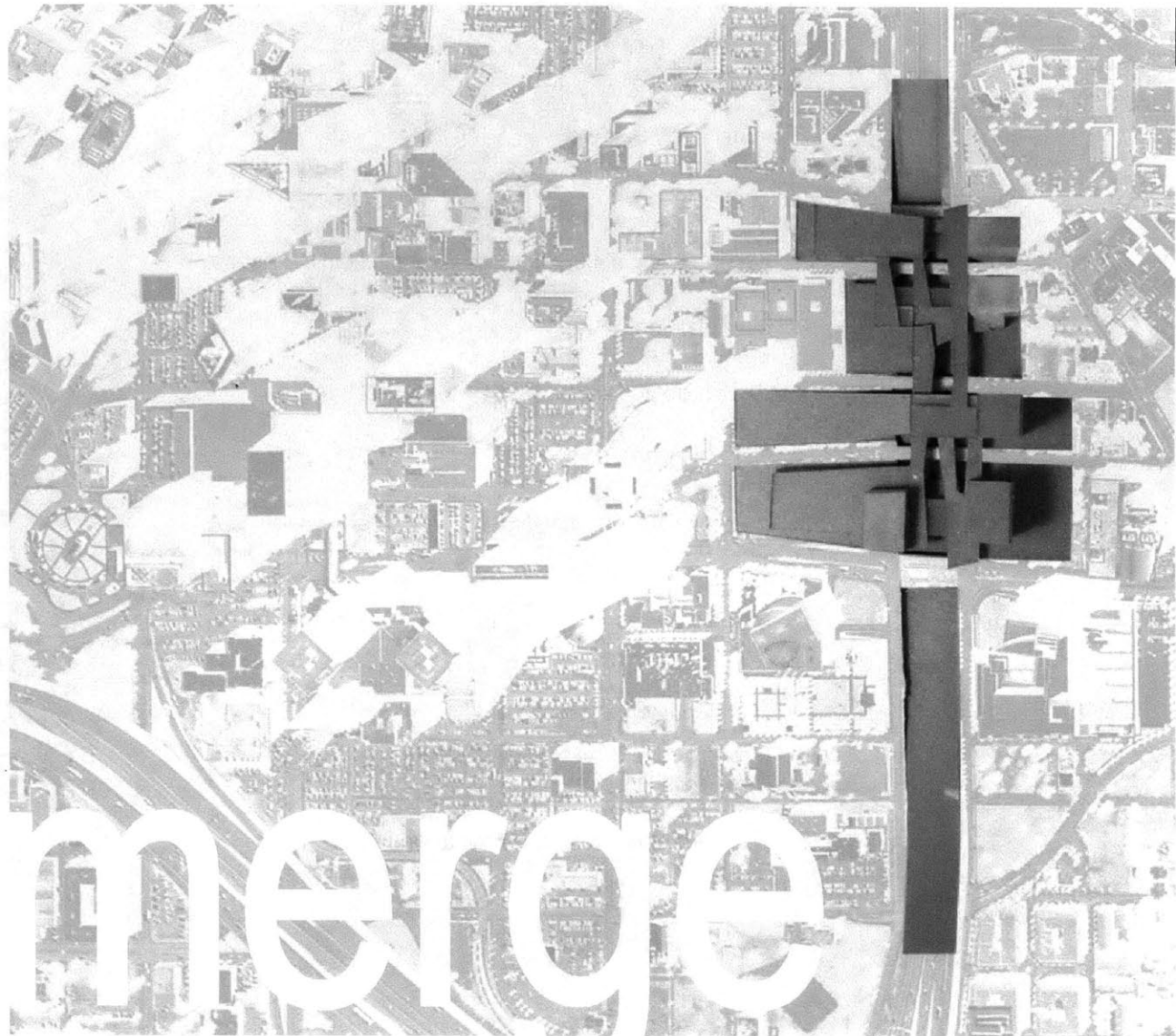
Many urban centers have become divided, bisected, even surrounded by the same infrastructures that continue to promote their growth. Zoning strategies and the character of particular neighborhoods and districts have been greatly influenced and impacted by the boundary of infrastructure in both positive and negative ways. The urban landscape, in both its physical scale and its planned usage, can often change dramatically from one side of the highway to the other separating what was once a single neighborhood into two separate districts. However, as densification and revitalization continues, the role of architecture as a means of reconnecting separated components of the city and physically absorbing infrastructure must be considered. The intention of this thesis is to investigate the impact of densification and revitalization of urban centers on the nature of architectural programs, generative forms and structures, and urban infrastructure as they begin to merge into hybrid structures. It is time to formally consider the anti-typologies generated when disparate programs combine, such as housing with cinema, or retail with religious halls, or highways with offices. As densification forces this merging, consideration must be given to the reconciliation of the combination of these disparate programs on both the urban scale and the architectural scale. What generative forms and spaces emerge through hybridization? This thesis investigation seeks to understand at what scales this hybridization can occur, from the urban scale of infrastructure to the architectural scale of building form and building identity.

Thesis Supervisor: Paul Lukez

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for my mom, dad, and aurora





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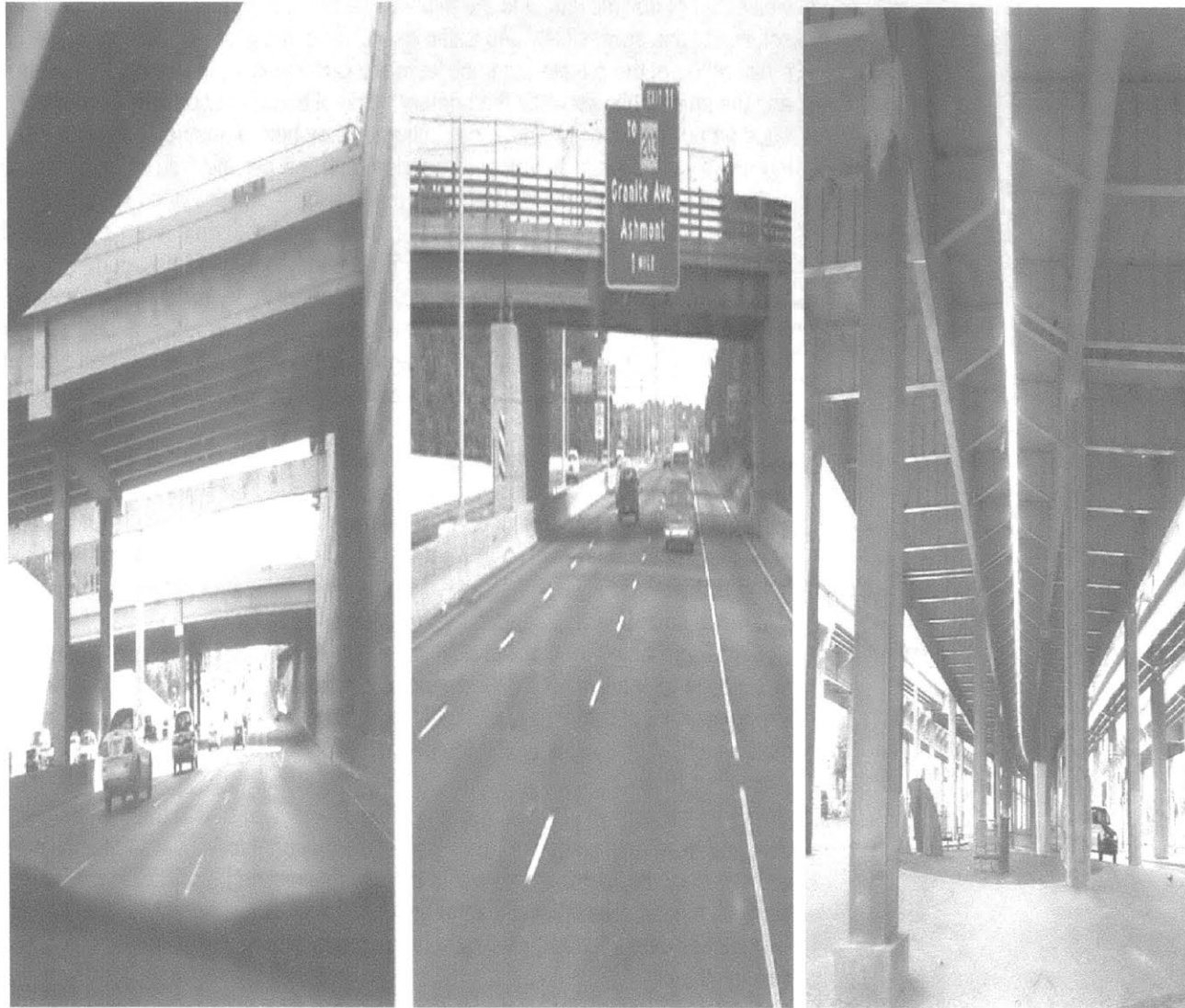
“When physical borders disappear, and walls, fences and barriers come down, they herald a moment of uncertainty. The real differences underlying everything, the interstitial spaces, the empty remains which are the residue of the borderline lives of the past remain fresh in the memory of reconciliations. Perhaps this is the task of the architect or the urban planner who works to recover places which used to be divided: to reconstruct spaces and narratives, but not without respecting the memories which used to inhabit these places.”

-editorial, *Borders*

continuity vs. disjunction

views of and from the highway

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Continuity vs. Disjunction: Views of and from the Highway

Highway infrastructure has played an undeniable role in the growth and development of U.S. cities and their central business districts. Since the second half of the nineteenth century, accessibility was thought to be the key to the vitality and well-being of downtowns, and the highway (with much opposition) was deemed later in the early twentieth century as the solution to this accessibility and traffic issue.¹ With the growing displeasure of mass transit and the growing popularity and proliferation of the private automobile, many U.S. cities implemented highways into the urban fabric. Today, the highway and the automobile serve as the primary mode of transportation for many Americans and have become a permanent presence on our landscapes and in our culture. They hold a unique position in our cities and in our lives being both a blessing and a curse, both a symbol of freedom and the playing field of rage and destruction. They both connect cities and divide cities, and it is this contradiction that makes the highway so significant in our present and future intentions for our cities. As traffic has steadily increased, and cities have become more and more sliced and divided in the second half of the twentieth century, the highway has become a recent target for rethinking. The famous elevated West Side Highway of New York City has been replaced with an at-grade boulevard, and Boston's elevated Central Artery is now planning to become completely buried, leaving a yet unplanned and unprecedented strip of greenspace above. Both of these measures are reactions against the brutal autonomy and imposition of the highway, yet both of these proposals have experienced their own criticisms and doubts. It is easy to both love and hate the highway, but difficult to know what to do with it.

A great appeal of the highway is its sense of continuity throughout its vast network. The highway is essentially anywhere that you need to be, and willingly connects cities and people. Also, the highway at almost any point produces a strange sense of familiarity through its relative placelessness. Both nowhere and everywhere, the placelessness of the highway provides a comforting continuity whether you are in Dallas, Texas or St. Louis, Missouri. The rules and the components of the highway are always the same. It is this familiarity that makes the highway accessible to everyone and has allowed it to make such a large impact on our contemporary culture and view of the landscape. The Pacific Coast Highway and Route 66 are both icons of the built American landscape. On these highways lies the adventure of road trips, and the automobile is one symbol of our freedom to move and explore. They are depicted in film and in literature and still hold a strong element of romance and adventure. While you are on the highway, navigating its landscape, there is little doubt to the strength of its continuity and the benefits of its autonomy.

However, the highway does come with a price. Highways have been instrumental in the formation of the suburban condition, and have only made the traffic issue that they originally intended to solve, worse. But most importantly for this thesis is the impact the highway has within the city itself. The decision to implement a piece of infrastructure as brutal as the highway almost always involves the disruption and disjunction of the existing city grain. The shear width of the highway (sometimes over 250 feet) plus its frontage roads, whether it is elevated, at grade, or depressed, creates a harmful barrier through the city.

fig.1 "Caution" sign close to the U.S. Mexico border illustrating the difficulty to cross the highway.



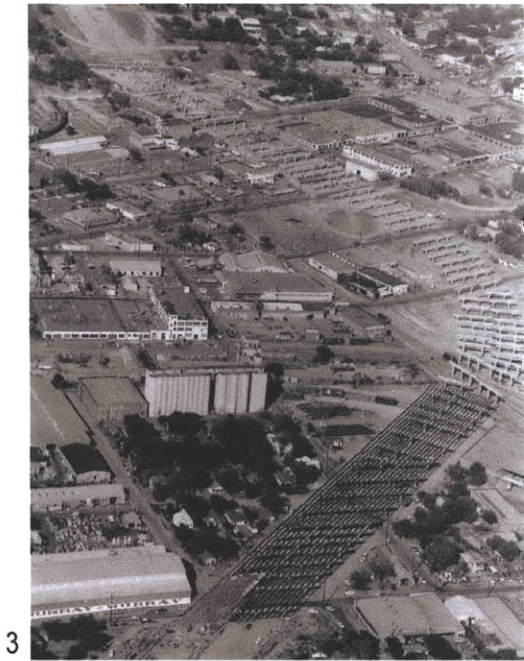
Many downtowns in the early part of the twentieth century thought the highway would increase the accessibility to downtown, but today many of those same downtowns now find themselves trapped by their own infrastructure.² This has created a significant disruption in the grain of many cities as the development and character of the city often changes from the downtown side of the highway to the other. This is in part due to the fact that zoning regulations and zoning areas are often defined by these lines of infrastructure, creating different guidelines for growth on both sides. Also, the highway produces a clear disruption in the flow of pedestrian traffic. It is often difficult, if not impossible, to cross a highway unless safe passage is provided either above or below it. In many cities where pedestrian traffic is already light, the encapsulating highway makes it almost impossible to extend the flow of pedestrian traffic and development beyond downtown. Finally, the physical presence of the highway also results in many dead and left over spaces both below and adjacent to it. Underpasses and interchanges have become dangerous places, and have proven to be difficult to deal with architecturally. Many cities like Dallas have begun to recognize the potential usefulness of these spaces and have assigned landscape and parking to these difficult areas. This is the beginning of recognizing that if the autonomy of the highway can be compromised and combined with other functions, there can be great benefits, for both the pedestrian, the driver, and the city.



fig.2 Underpass at the Woodall Rodgers Freeway near the West End. The left over space underneath is used as a parking lot.

fig. 3 An elevated portion of Interstate I-20 in Dallas under construction illustrating the disruption of the existing grain.

fig. 4 Ground view of an elevated portion of Interstate I-20 under construction.



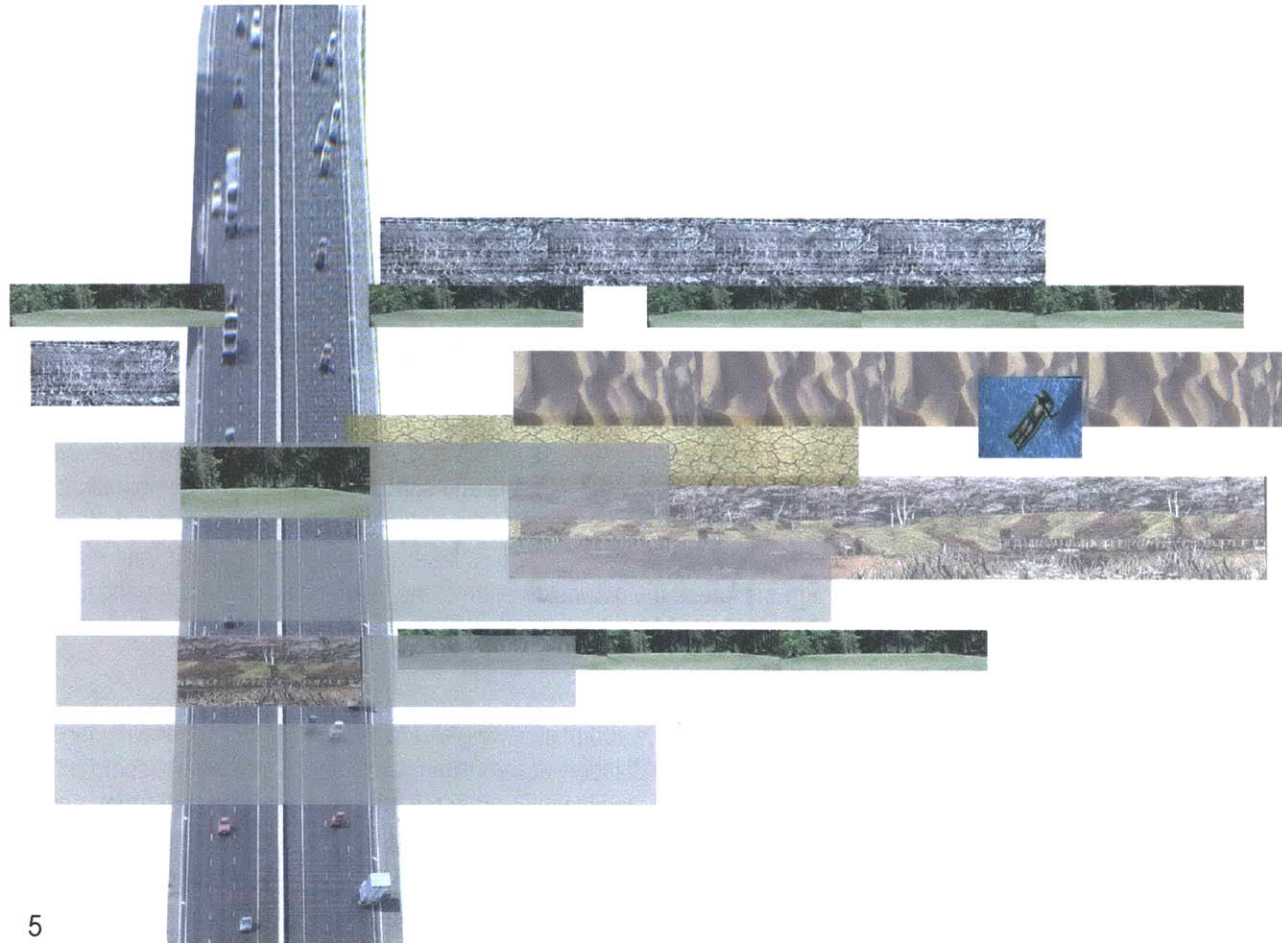
If there is to be a “new urbanism” it will not be based on the twin fantasies of order and omnipotence; it will be the staging of uncertainty; it will no longer be concerned with the arrangement of more or less permanent objects but with the irrigation of territories with potential; it will no longer aim for stable configurations but for the creation of enabling fields that accommodate processes that refuse to be crystallized into definitive form; it will no longer be about meticulous definition, the imposition of limits, but about expanding notions, denying boundaries, not about separating and defining entities, but about discovering unnameable hybrids; it will no longer be obsessed with the city but with the manipulation of infrastructure for endless intensifications and diversifications, shortcuts and redistributions - the reinvention of psychological space.

-Rem Koolhaas, "Whatever Happened to Urbanism," 1994

hybridization

mediating architecture, infrastructure, and landscape

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Hybridization

The notion of hybridization in architecture has had a significant role in the growth and evolution of cities throughout history. The combination of multiple architectural programs, functions, and urban components within a single system inherently challenges our notion and understanding of autonomous types at both the architectural scale and the urban scale. The house over the shop is an example of a hybrid building that can be found throughout history producing a unique live/ work condition. Also, the inhabited bridge combining architecture and infrastructure can still be found in many cities around the world today such as the Ponte Vecchio in Florence, Italy or the Rialto in Venice. These hybrids produce a unique ambiguity as these autonomous types are combined and reconciled. I believe that it is within this reconciliation of types where innovation and invention can be found. For this reason, hybridization serves as an appropriate means of addressing the autonomous condition of the highway. As previously discussed, the highway, although inherently tied and integrated with the city, maintains a high degree of autonomy and creates an overwhelming barrier within the city that it serves. The process of hybridization seeks to disrupt the singularity of the highway and hopes to find the possibility of new types of urban spaces and architectural constructions.

For the purpose of this thesis, the term hybridization will be defined at both the architectural scale and at the urban scale. At the architectural scale, hybridization will refer to the combination of disparate programs within a single structure (i.e. house + shop). When disparate programs combine, opportunities arise as the programs are reconciled. There are often specific program requirements or privacy/ security issues that create an uneasy alliance within these hybrids, but the solutions often lead to inventive forms and spaces. In fact, some combinations can lead to surprisingly compatible configurations. For example, if a cinema and housing were combined, the dark spaces of the theatres could be partially buried and the housing perched on top to take advantage of light, air, and views. Furthermore, the combination of disparate programs forces the reconsideration of the relationship of program and function to the singular gesture of architecture and building identity. That is, should a building "look like what it is?" Hybridization challenges this conventional view of building identity.

At the urban scale, hybridization will refer to the combination of architecture, infrastructure, and landscape within a system or complex. Hybridization at the urban scale seeks to merge discordant components of the city such as architecture, infrastructure, and landscape in order to generate new models of urban space and urban relationships. These previously autonomous systems can be merged into an ambiguous state, revising and challenging their previous relationships to each other. Koolhaas writes: "Imagine an open space, a clearing in the forest, a leveled city. There are three elements: roads, buildings, and nature; they coexist in flexible relationships, seemingly without reason, in spectacular organizational diversity. Any of the three may dominate: sometimes the 'road' is lost - to be found meandering on an incomprehensible detour; sometimes you see no building, only nature; then equally unpredictably, you are surrounded only by building. In some frightening spots, all three are simultaneously absent."³

infrastructure + landscape



6

architecture + landscape



7

architecture + infrastructure



8

Likewise, all three may be simultaneously present. What will arise from the reconciliation between the stillness of the urban park and the relentless motion of the highway? Can architecture and landscape overcome the placelessness of the highway? And can new forms of landscape mediate between architecture and infrastructure? The speculative fusion of these components of the city challenge conventional notions of their identity and suggests a new type of urban public space.

It is the intention of this thesis to investigate the formal and spatial generative possibilities as this notion of hybridization is applied to the singularity of the highway condition at both the architectural and the urban scale. The design process of this thesis focuses and utilizes the understanding and proposition of hybridization at both of these scales through specific references. First, at the architectural scale, is the idea and implementation of the inhabited bridge. Both architecture and infrastructure, this hybrid possesses the capacity to continue urban activity from one side of a river to the other through retail, housing, and other functions. This idea of simultaneously creating both a physical connection with a bridge and an urban connection through program and activity becomes a very appropriate model for addressing the highway. At the urban scale, are the ideas and propositions of the Situationists. Their ludic approach to urban spaces has inspired inventive combinations of architecture, infrastructure, and landscape both in their own propositions as well as in many propositions of contemporary designers that have followed. Following is a brief account of the history and relevance of hybrid buildings, an elaboration on the inhabited bridge type, and a brief discussion on the ideas and relevance of the Situationists.

[history]

Although examples of hybrid buildings can be found throughout history, their emergence and relevance to cities began in the 1880's in the growing metropolises of the United States. Joseph Fenton has produced a rich catalogue of hybrid buildings where he states that, "Hybrid buildings, inherently multifunctional and responsive to the constraints of the American urban grid, can be offered as models for the stimulation and revitalization of American cities." He continues, "The hybrid type was a response to the metropolitan pressures of escalating land values and the constraint of the urban grid. With horizontal movement restricted, the city fabric moved skyward."⁴ Consequently, cities like New York and Chicago saw a proliferation of hybrid buildings throughout the late 19th century and into the 20th century until the Great Depression. In this time, buildings such as Rockefeller Center and unbuilt proposals such as the Apartment Bridge, both in New York City and by Raymond Hood, aggressively combined programs, infrastructure, and public space becoming models of density and true urban generators. The proliferation of hybrid buildings seemed to end with the Great Depression, and the post-war development of U.S. cities began adopting the urban planning concepts of the Congrès Internationaux d'Architecture Moderne (CIAM) IV advocating the segregation of live, work, and recreation. This concept of segregation made the hybrid building almost obsolete.⁵ However, the recent trend to revitalize the Central Business Districts of many U.S. cities forces the reconsideration of the hybrid building as a means of densification and as a means to activate urban spaces.

fig. 5 Conceptual collage of highway and ribbons of landscape.

fig. 6 Underpass of highway intersection at Deep Ellum area outside of downtown Dallas illustrating an intention to landscape the left over space of the highway.

fig. 7 TU Delft Library by Mecanoo Architects combining architecture and landscape.

fig. 8 "A Five Storied Street" illustrating the possible need to combine infrastructure with the architectural space of downtown.

fig. 9 Conceptual collage combining the highway with architecture.



The hybrid building also has relevance today because its limits are beyond architecture and building program. The interweaving of architecture with urban plazas, urban infrastructure, and urban parks opens the possibilities to investigate new kinds of public spaces and new dialogues between the diverse components of the city.

[the inhabited bridge]

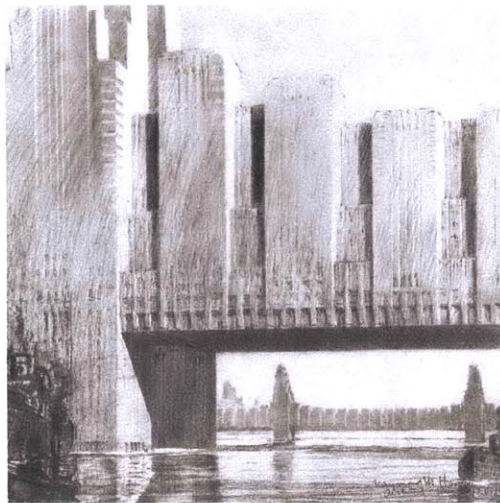
The inhabited bridge is a unique and relevant type of hybrid building because of its capacity to continue urban activity from one side of a river to the other. Although scarce today, the inhabited bridge proliferated throughout Europe in the Middle Ages, particularly in Italy, France, and England. These bridges became significant urban components and were able to accommodate a wide array of grafted programs. In an article focused on the inhabited, or “urbanized” bridge, Jean Dethier regards this type as “...a construction which, thanks to its public nature, in that it is a way of crossing a natural (river, valley) or artificial (railway, turnpike or navigable canal) obstacle, lends itself, as an element of active connection between two urban entities, linking them by means of a (continued or discontinued) row of buildings that accommodate different functions (cultural, social, tertiary, domestic, recreative). Inhabited bridges, both as built projects and as proposals on paper, have contained grafted building types ranging from churches to office buildings to apartment buildings. Since the Middle Ages, the inhabited bridge has followed a unique evolution from a vernacular combination of building and bridge, to a deliberate singular architectural expression, to a formalized urban generator. Today, the inhabited bridge serves as a model for our understanding of how architecture and infrastructure can be combined and merged into a system that can produce charged architectural forms and needed urban connections.

Ponte Vecchio . Florence, Italy

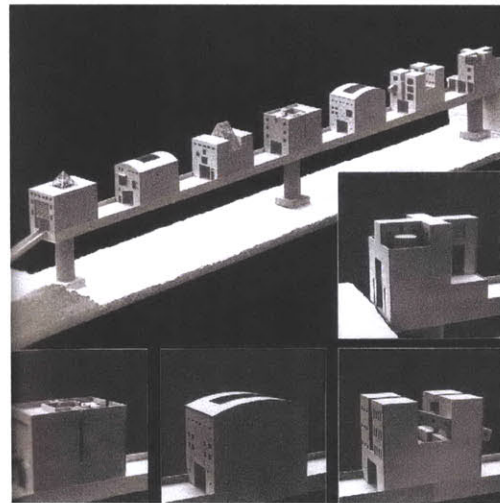


They hold great significance today as architects and planners rethink the role of urban centers and their current disconnection from their surrounding neighborhoods. The Ponte Vecchio in Florence, Italy has long been the archetype of inhabited bridges, and still stands today as a major tourist attraction. This inhabited bridge is an example of a vernacular and intuitive grafting of buildings to bridge, where the seamless continuation of the urban fabric is the primary intent. The other approach to inhabited bridges focuses more on the formal architectural expression of the inhabited bridge, solving the urban connection through a reasoned, architectural investigation. Raymond Hood's Apartment Bridges in Manhattan are a good example of this, both extending Manhattan across the Hudson and East River and creating powerful architectural gestures through the renderings of Hugh Ferriss. The bridge component and the other programs, including apartments, offices, stores, hotels, and theatres, are conceived of as a single, coherent architectural gesture. Steven Holl continues this formal exploration a little differently through his Manhattan Bridge of Houses proposal. In this proposal, Holl utilizes the existing superstructure of an abandoned elevated rail link in the Chelsea area of New York City. Holl grafts different houses onto the abandoned rail link to respond to and support the conversion of that area from a warehouse district to a residential one. Although this proposal is not necessarily concerned with connecting separated areas, it is an example of the potential to architecturalize existing infrastructure. Bernard Tschumi's Interface Flon-Station in Lausanne, Switzerland capitalizes on Lausanne's existing bridge typologies, and uses the inhabited bridge as urban generators. Each of the new bridges defines its own character through different programs and connects two parts of the city across the valley. All of the previous examples illustrate the inherently urban quality of the inhabited bridge. They also reveal the incredible architectural and spatial potential in a hybrid building aggressively combining

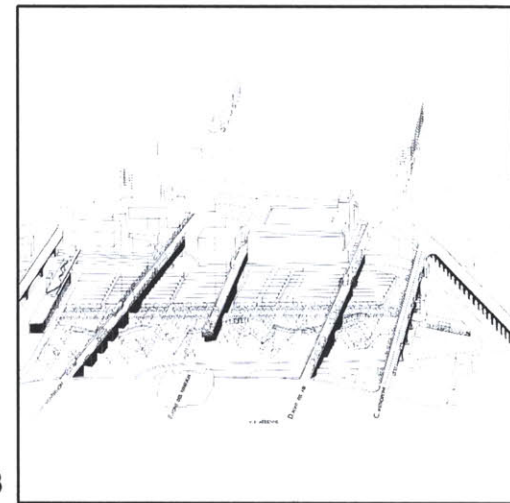
Apartment Bridge . Raymond Hood



Bridge of Houses . Steven Holl



Interface Flon-Station . Bernard Tschumi



[new babylon and euralille: rethinking urbanism]

The segregationist urban planning policies of the Congrès Internationaux d'Architecture Moderne (CIAM) IV had a large impact on the post war growth and development of many U.S. cities and on the early demise of the hybrid building. These notions of separating housing, work, and recreation are now being reconsidered, but the impact of those policies remain today. One of the opponents to these ideas of urbanism at that time was the Situationists. Founded in 1957, the Situationists emerged from the break up of the Surrealist movement and acquired a consistent underground cult-following. They shared with the Surrealists an intention to merge art with life and translated these intentions to advocate for a different idea of urbanism. The Situationists "practiced an alternative form of 'unitary urbanism,' both systematic in its methods and playful in its goals. Their vision of a liberated urban life was expressed in new ways of representing and mapping the city, in new forms of architecture and urban poetry, and new procedures for engaging and transforming the urban environment that remain, to this day, a key reference for artist and activists in many countries."⁷ One of the key members of the Situationists was Constant Nieuwenhuys, whose proposals for a future city called New Babylon embodied the urban ideals uniting the group. New Babylon represented a different view of the city as a wide mesh, a network of connected sectors superimposed over a system of rapid transit routes. Constant's guiding concept was the "principle of disorientation", "a deliberate confusion of spatial hierarchy through obstacles, incomplete geometries, and translucent elements."⁸ New Babylon is significant in its intention to merge all aspects of life for new situations, new adventures. Although the megastructural scheme of New Babylon was met with expected criticism, its intention to disrupt the segregated urban model was significant.

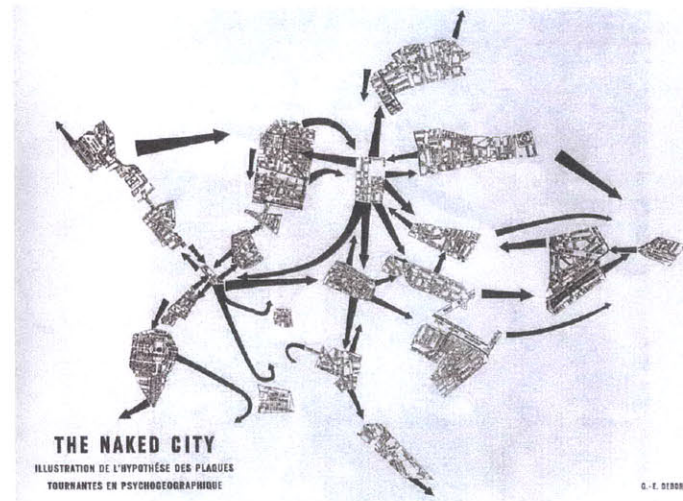


fig. 10 Ponte Vecchio combining bridge and retail.

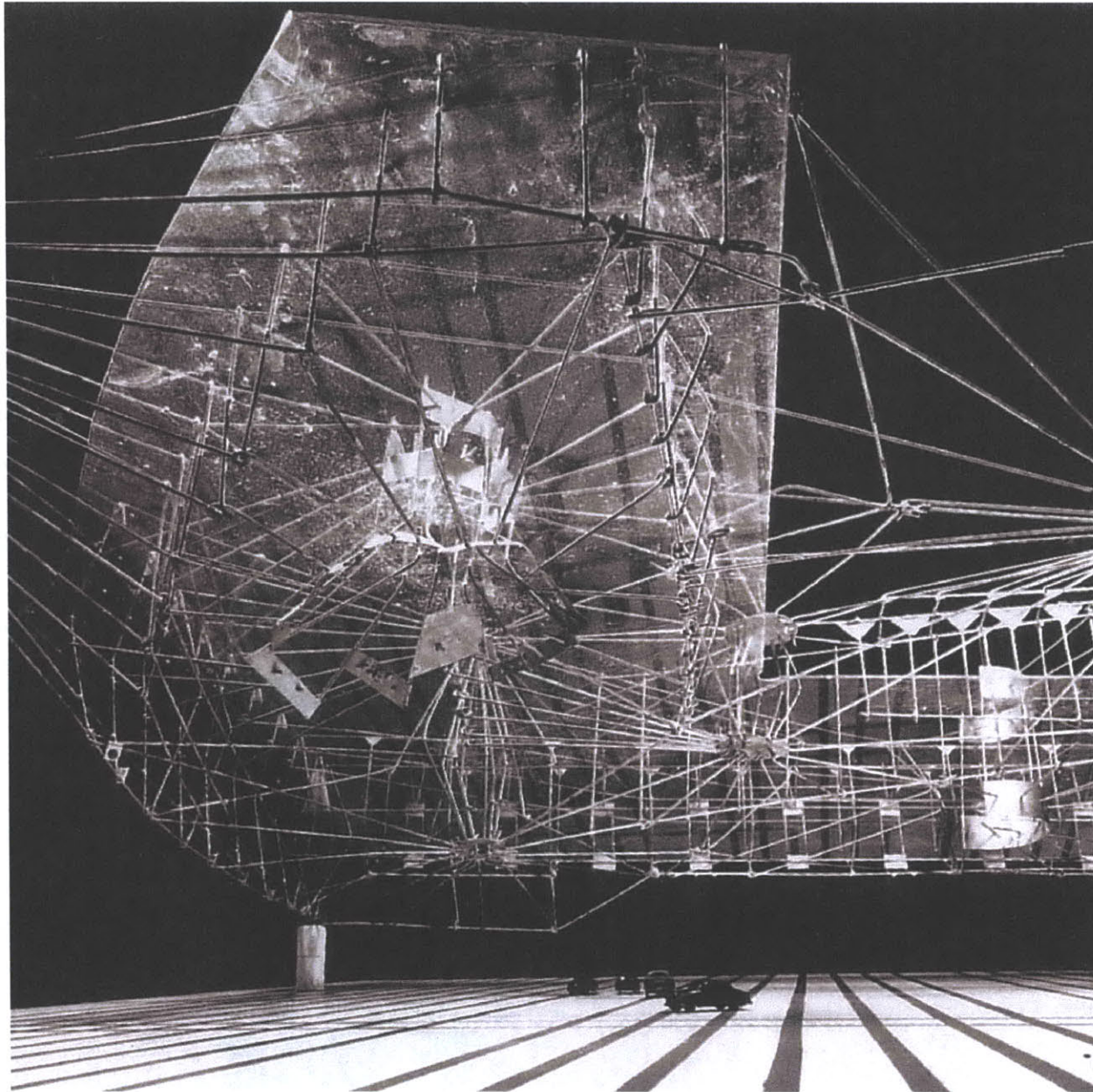
fig. 11 Manhattan Apartment Bridge proposal by Raymond Hood (illustration by Hugh Ferriss) combining bridge with retail, housing, office, and entertainment.

fig. 12 Bridge of Houses proposal by Steven Holl grafting different houses for different users on an existing, abandoned elevated rail link in Manhattan.

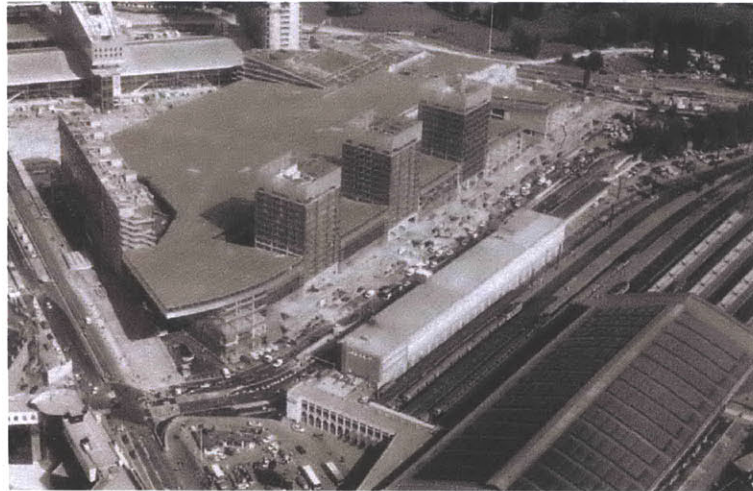
fig. 13 Interface Flon-Station in Lausanne, Switzerland by Bernard Tschumi utilizing the inhabited bridge in series.

fig. 14 Situationist mapping of the "Naked City."

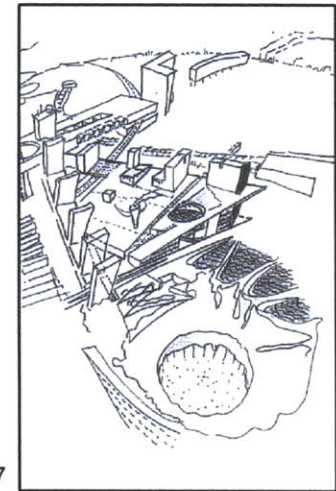
fig. 15 Model photo of Constant's New Babylon illustrating the interface between one sector and the transit system below.



Today, architects such as Rem Koolhaas with OMA are also challenging the current urban model and are seeking new alternatives, and new uses for infrastructure. One such project is Euralille, whose grand intentions are to create a new city center in Lille, France. The significance of this project is both in its enormous scale and its intention to combine varied functions and aspects of the city into a coherent complex. Euralille combines a new TGV transportation station, housing, hotels, exhibition, offices, and a city park into a complex intended to redefine public and urban space. Koolhaas states, "What we're interested in is the development of new urban models; in the wake of the urbanism of the eighties and nineties, we should now be focusing on the discovery of a new type of urbanism which opposes the concept of the city as an ordered series of objects; we should be promoting forms which are rarely expressed and which have no architectural relation whatsoever with one another."⁹ Especially intriguing and relevant to this thesis are the initial sketches by Koolhaas that seem to suggest a playful, candid combination of architecture, infrastructure, and landscape reminiscent of Situationist ideals. These sketches illustrate a clear intention of integrating different components of the city, and seem to seek new possibilities through unforeseen combinations. Fig. 18 contains the automobile, the plane, the train, and the escalator as the primary architectural elements defining space. Likewise, the escalator in Fig. 19 acts as a deliberate extension of the landscape beyond. The sketches are intentionally vague, but explicitly illustrate the intention to define new urban models and new associations and relationships in the city.



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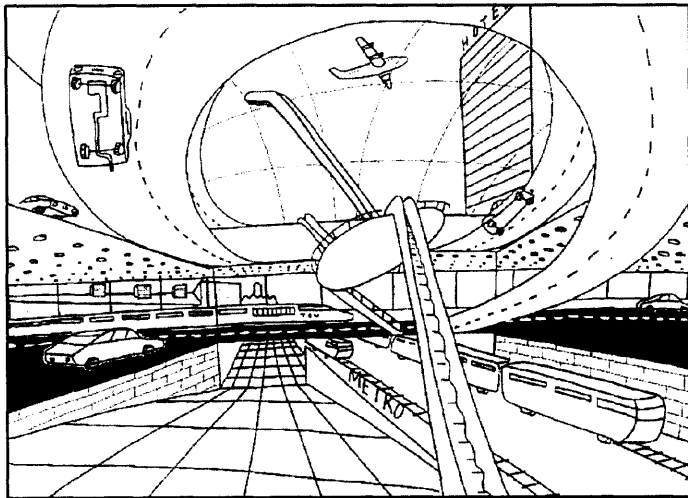
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fig. 16 Aerial view of Euralille Business Center.

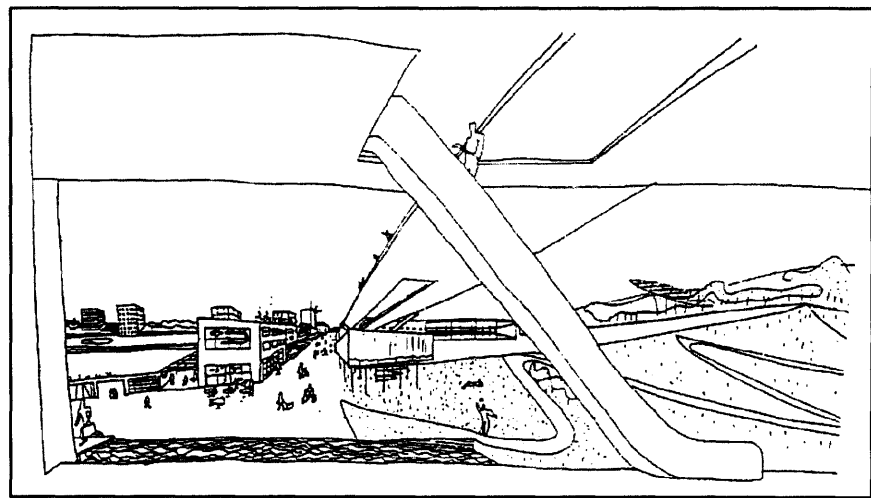
fig. 17 Overall view of project. From top to bottom: bridge building, triangle, towers overlooking the TGV tracks, and city park.

fig. 18 Interior view of Piranesian space of Euralille.

fig. 19 View of the public spaces from the "TGV window."



18



19



the site
dallas, texas

site



Dallas, Texas

The city of Dallas in North Texas is home to 1.2 million people, almost all of whom rely on their automobile as their primary mode of transportation. Today, Dallas consists of a primary central business district, a growing suburban condition and edge cities to the north, a massive highway infrastructure, and a tight relationship to its neighbor Fort Worth to the west. Dallas is a young city, but grew and developed like many cities in the post-war era and fell into many of the same pitfalls. These pitfalls include a downtown that is encapsulated by highways, a proliferation of sky bridges, and an underground development concourse downtown, all of which have contributed to the dismal, nine to five condition of downtown. In an essay on the analogous city, Trevor Boddy discusses this condition in Dallas:

Dallas is a case in point, demonstrating these disturbing trends in the evolution of the analogous city. The key planner for the Dallas system of bridges and tunnels is the very same traffic engineer who helped propose Montreal's underground city - Vincent Ponte. The *éminence grise* of the analogous city, Ponte went so far as to propose banning pedestrians from parts of Dallas because "one of the chief contributing factors to traffic congestion is crowds of pedestrians interrupting the flow of traffic at intersections." The solution, according to Ponte and other proponents, is to displace virtually all pedestrian activity into the simulated urban realm overhead and underfoot. The problem with the Dallas system is the spatial injustice it has done to the city. While one might try to explain away the social and racial separation of Charlotte or Calgary as the minor inconveniences of small and self-correcting cities, to see it on the scale of downtown Dallas brings the metaphor of spatial apartheid home: the nonwhite, the socially nonconformist, or the politically dissenting are unlikely to ever be allowed to install themselves in the quasiprivate domain of the city's elevated and underground shopping concourses.¹⁰

Likewise, the development above and underground has taken away activity from the street level, leaving only cars and parking lots. Many times, I have wondered how different downtown Dallas might be if all of that activity were brought to the street level. Adding to the problems of downtown is its encapsulating highway infrastructure. Bordered by the Woodall Rodgers freeway to the north, Interstate I-30 to the south, Interstate I-35E to the west, and Highway 75 (Central Expressway) to the east, downtown is completely separated from its surrounding neighborhoods. I believe that the presence of this infrastructure inhibits the potential growth of downtown, creates a discontinuous fabric between these adjacent neighborhoods, and makes the potential for an enjoyable pedestrian experience between these neighborhoods almost impossible. However, despite its problems, Dallas is a young city and seems to be slowly reinventing itself. For the past several years, there seems to be a rebirth of downtown. Many young professionals are choosing to move back into the city looking for a more urban life rather than the suburban option to the north. Consequently, many downtown buildings and warehouses have been renovated to accommodate a growing demand for housing. Dallas has also implemented a light rail system, DART (Dallas Area Rapid Transit) which has enjoyed reasonable success. Although it has limited extensions into the northern suburbs, their park-and-ride ridership seems to consistently grow. Whether this trend will continue remains to be seen, but the intention for a more pedestrian oriented environment seems clear. Another indication of the re-urbanizing of downtown is the growing number of cultural and entertainment projects in the area. The Arts District, adjacent to the Woodall Rodgers Freeway and nestled between downtown and uptown, continues to see new and

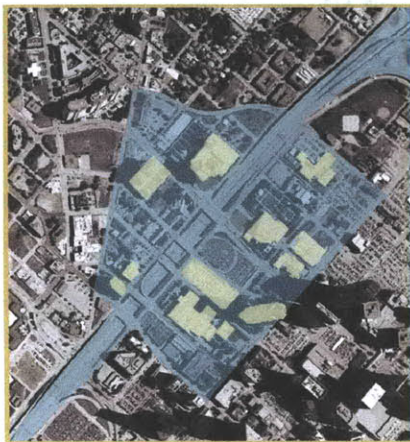
fig. 20 Aerial view of downtown Dallas and the Woodall Rodgers Freeway looking east.

fig. 21 Aerial Diagram illustrating the relationship between downtown, the surrounding highways, and the surrounding neighborhoods.

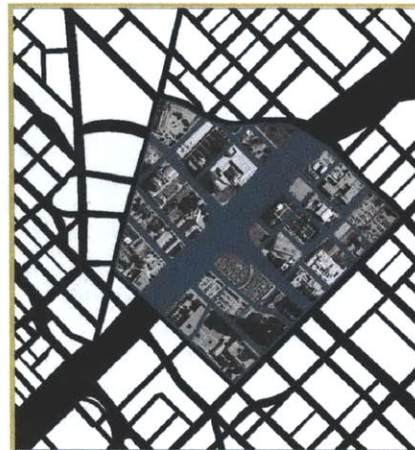


exciting additions for the city of Dallas. Among them is the Nasher Sculpture Garden by Renzo Piano which will house one of the foremost collections of modern sculpture in the world. Also, the new American Airlines Arena serves as an anchor for a new mixed use development which will include new housing, offices, retail, and entertainment. All of this new development and urbanization of downtown seems to indicate an opportune time for designers and planners to also reconsider the relationship of downtown to its surrounding highway infrastructure. The reconsideration of this relationship could yield new developments and new types of urban space. The current relationship between downtown and the highway is one of containment and separation, both physically and experientially, from its surrounding neighborhoods. The intention of this thesis is to focus on this relationship and attempt to overcome this containment and separation through the notion of hybridization. Specifically, I will be focusing on the relationship between downtown and uptown separated by the Woodall Rodgers Freeway. How has the highway affected the way that these two areas have developed, and how will the current model and zoning strategies affect the character of these two areas as they continue to develop? Is it possible to knit these areas across the highway through hybrid buildings, combining architecture, infrastructure, and landscape? And can this be done while also attempting to reinforce a new pedestrian friendly model for Dallas? I believe that these questions are not only relevant for Dallas, but also for the generic condition of the highway itself. This condition is not unique to Dallas, and many other cities in the U.S. are undergoing similar positive revitalization. The intention is not to create a type ro solution for deployment, but rather to reveal the possibilities when architecture, infrastructure, and landscape meet.

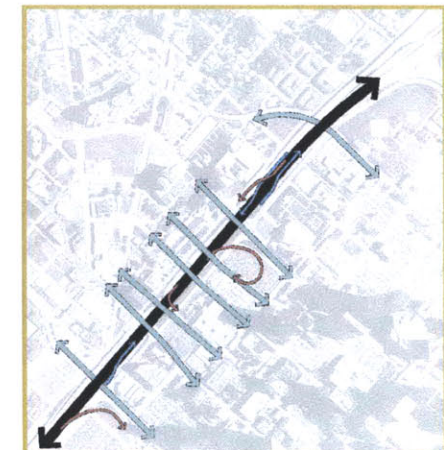
arts district + uptown + highway

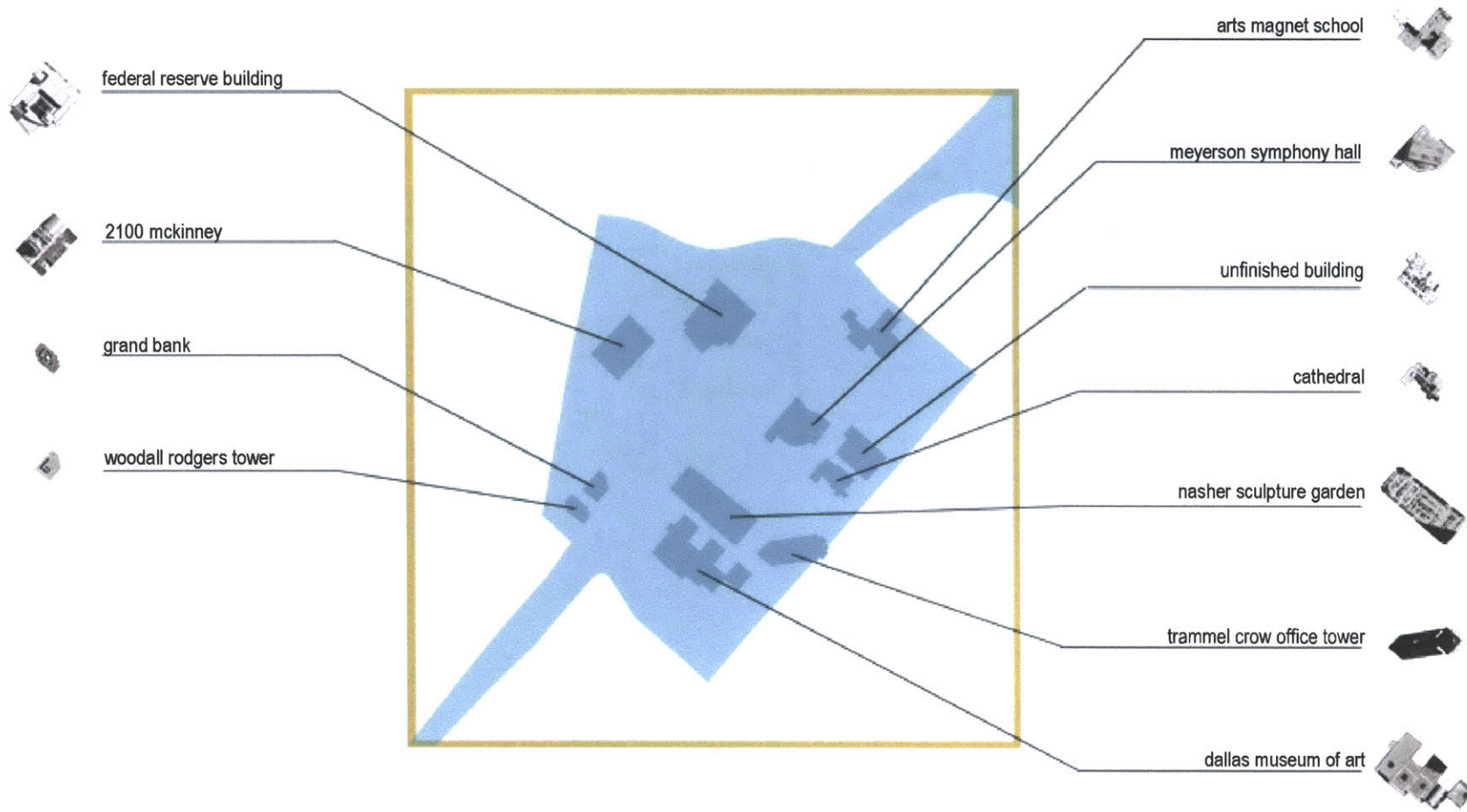


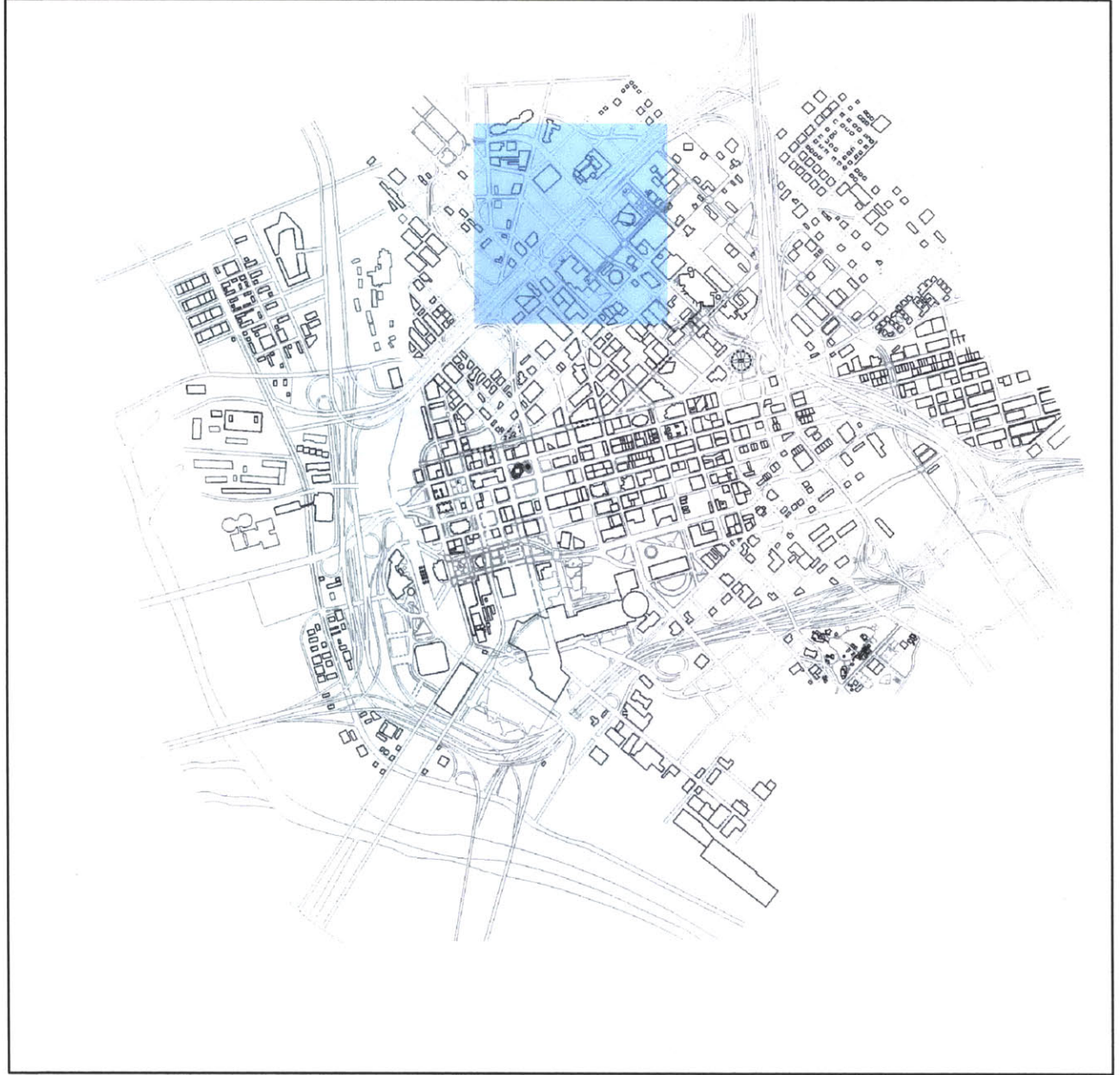
streets



access

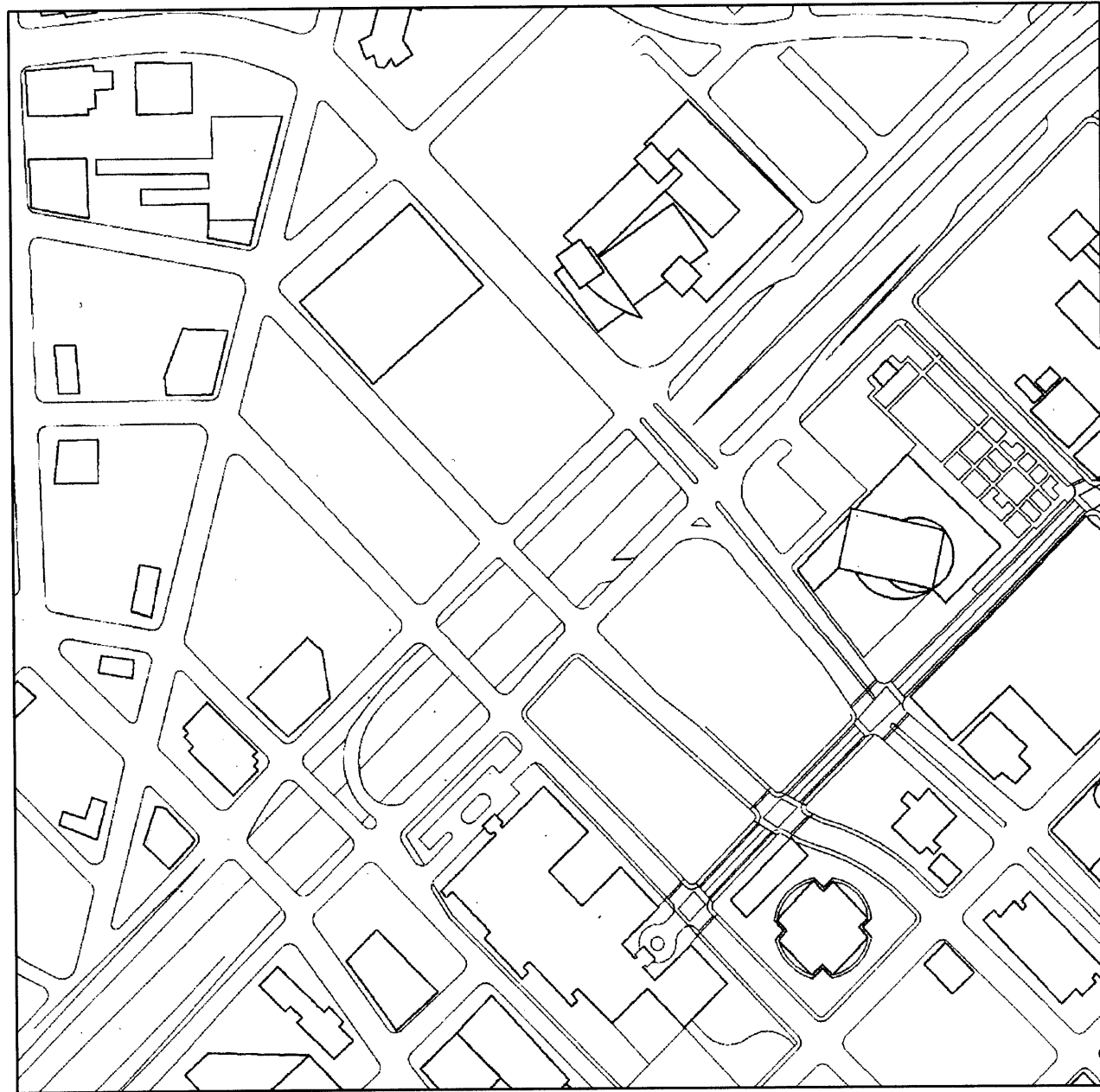


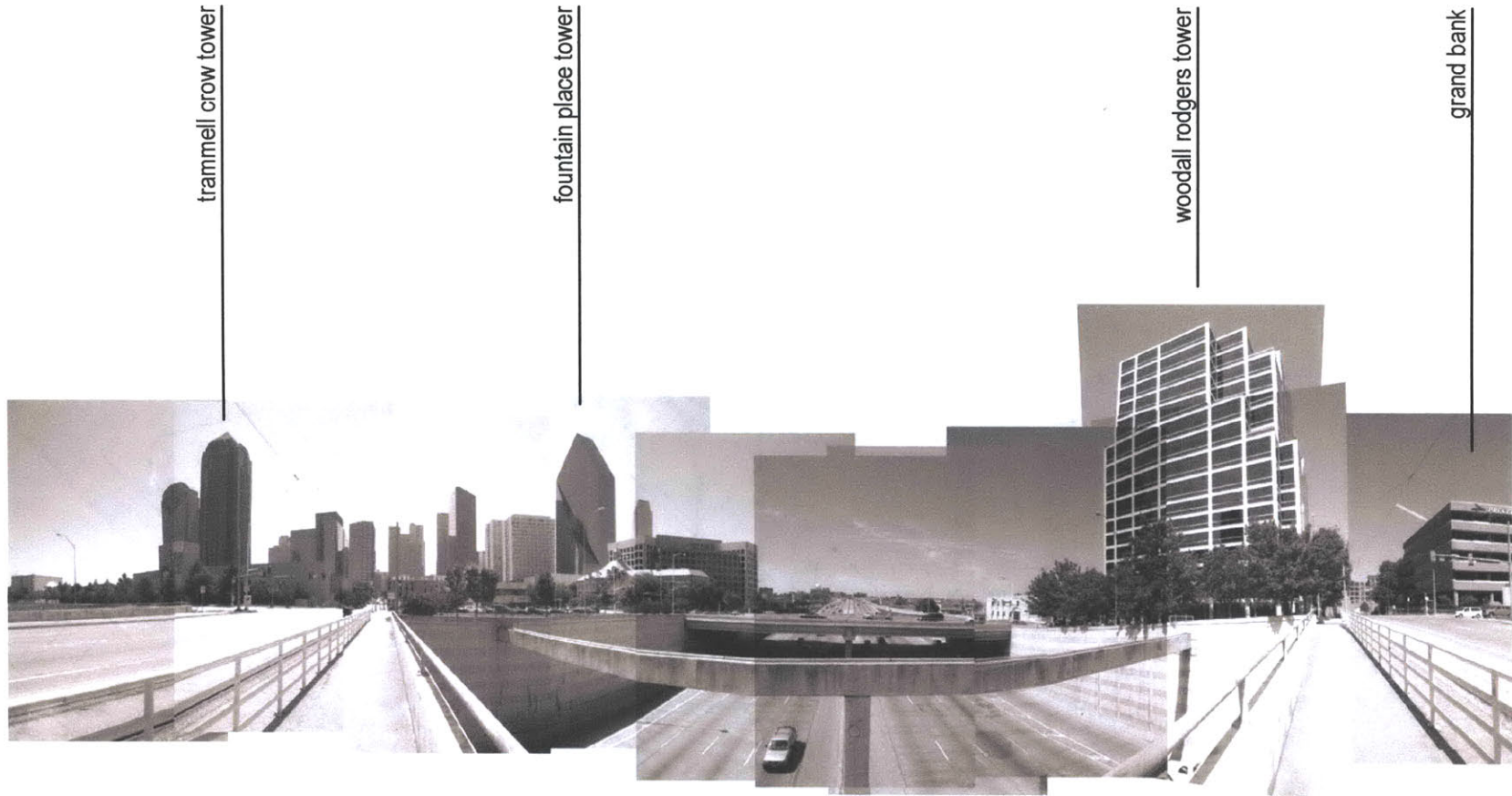




left: central dallas (nts)

right: site plan (nts)





view looking southwest



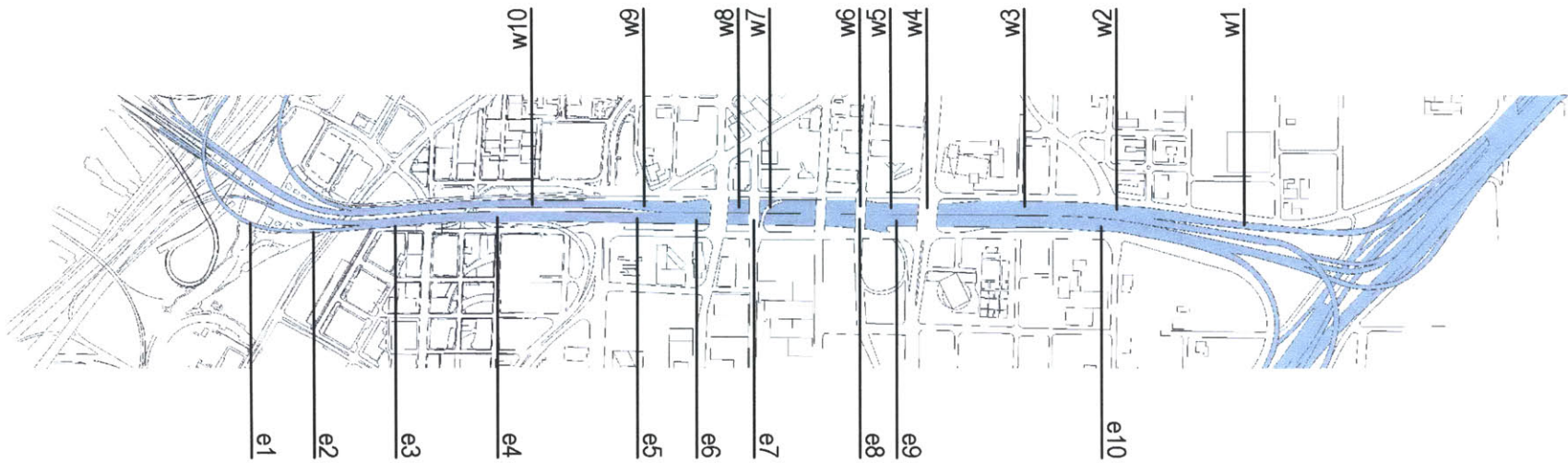
view looking southwest

[the freeway]

Woodall Rodgers Freeway was constructed in the 1970s and now separates the northern end of downtown from the beginning of uptown which continues into the north. The freeway services over 120,000 vehicles per day and is one of the major points of entry into downtown.¹¹ The freeway runs southwest-northeast connecting two major north-south corridors, Interstate I-35E to the west of downtown and Highway 75 (Central Expressway) to the east of downtown. The freeway is an elevated condition at both ends of its interchanges, briefly comes to grade, then is a depressed condition at the center of its run. The presence of these three conditions of the highway (elevated, at-grade, and depressed) makes this freeway of particular interest to this thesis because it allows for architectural speculation at three different spatial conditions of the generic highway. Downtown and uptown connect at the freeway's depressed condition with five at-grade connections. This creates a dramatic spatial condition in the freeway, and reinforces the need to reestablish this vital connection.

woodall rodgers freeway





e1



e2



e3



e4



e5



e6



e7



e8



e9



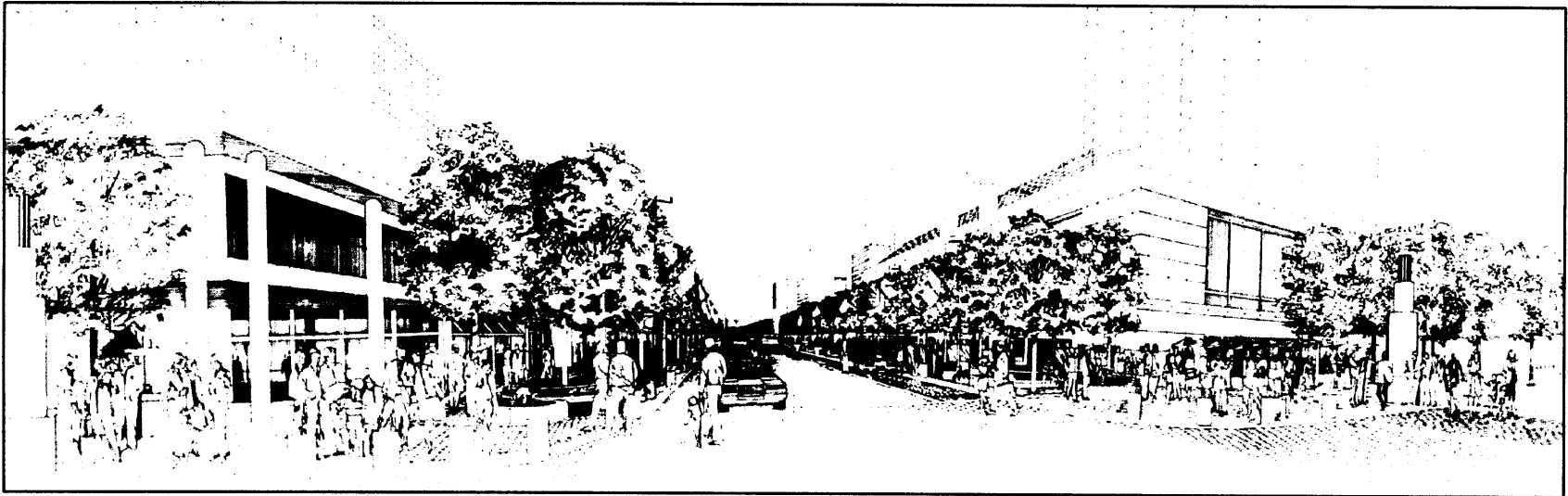
e10

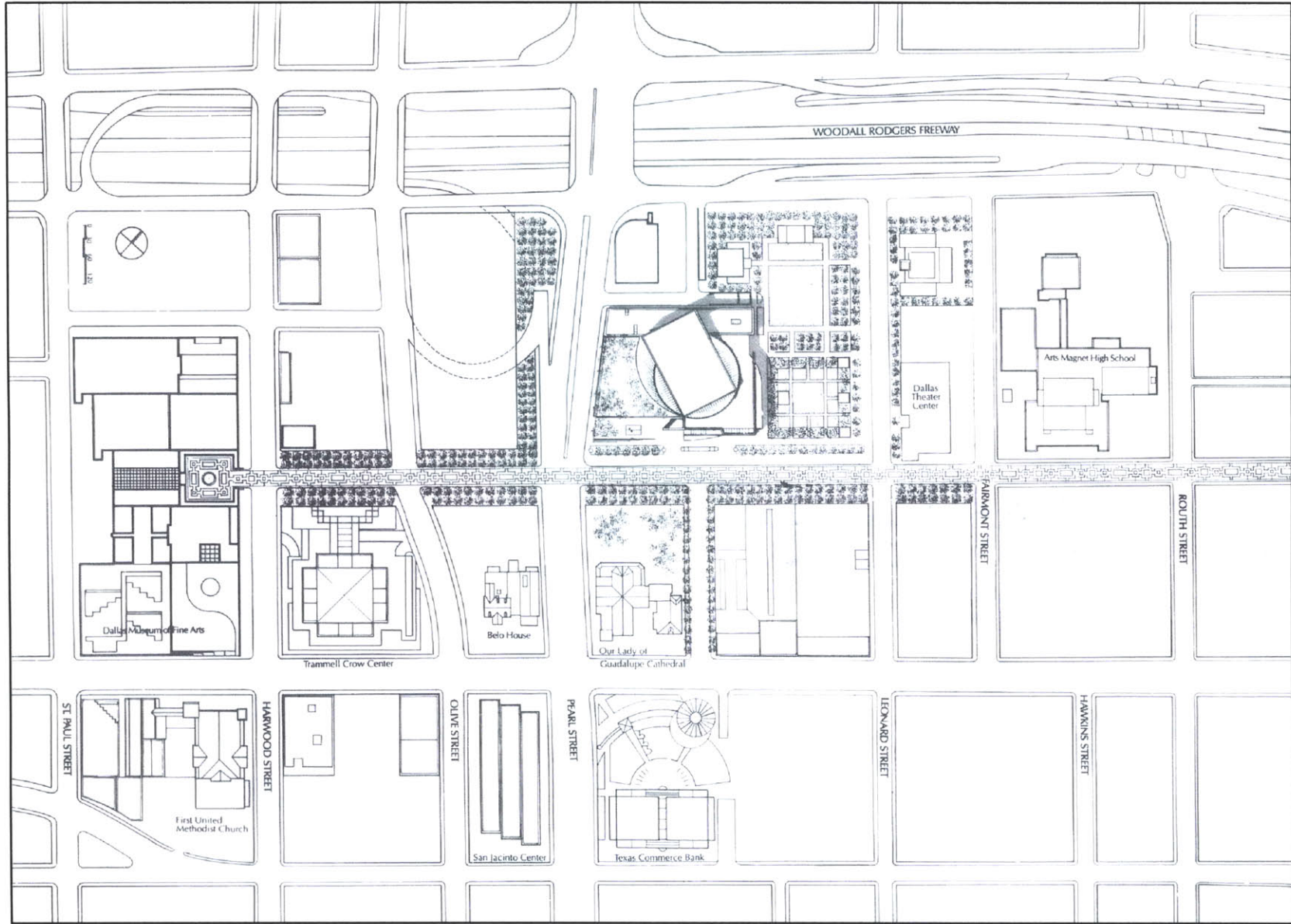


[the arts district]

The Arts District occupies the northeast corner of downtown, adjacent to the Woodall Rodgers Freeway, and has been developed as a 20-block cultural district for Dallas. The concept of the Arts District began with a study of the Dallas cultural facilities in 1977 by Stephen Carr and Kevin Lynch. The development of the Dallas Museum of Arts then proceeded with a collaboration between Edward Larrabee Barnes and Carr-Lynch, and the growing interest and development of the symphony, opera, and ballet organizations soon followed. Each organization began acquiring land in the northeast corner of downtown, as advised by Carr-Lynch, and shortly after began organizing themselves to develop the area. Sasaki Associates then won a competition to masterplan the area to include the Dallas Museum of Art, a symphony center, high-rise office buildings, shops, galleries, restaurants, hotels, and other cultural institutions.¹² The Arts District is loaded with good intentions, but almost twenty years later, has not yet become the place that it had promised. There is no housing planned for the area, and little or no retail exists there today, which makes it a rather desolate area most of the time. Today, the Dallas Museum of Art still stands as its western anchor point, and the district has seen the addition of the Meyerson Symphony Center by I.M. Pei, and the Nasher Sculpture Garden by Renzo Piano (now under construction).

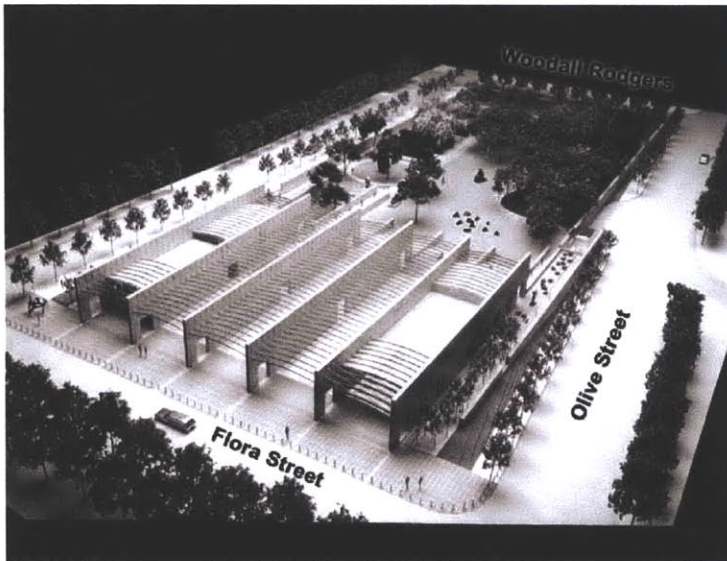
the arts district





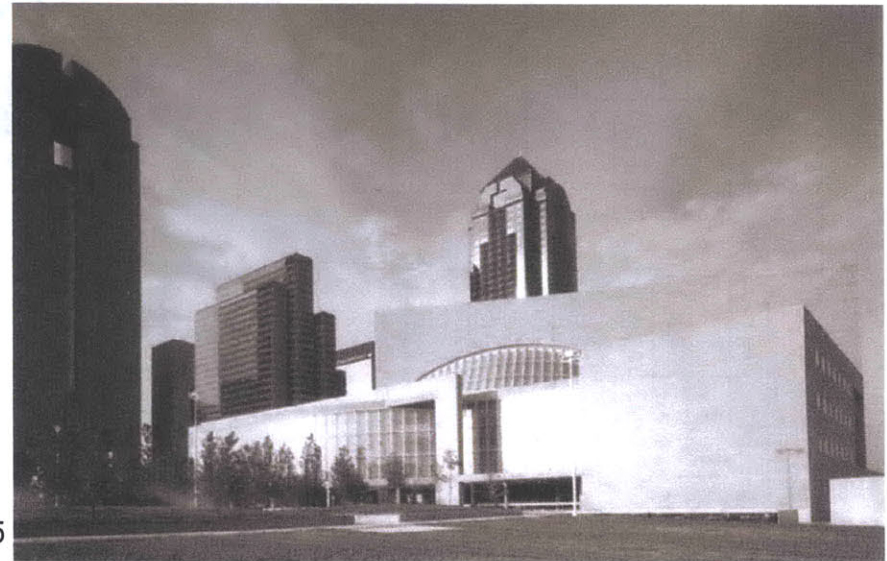
While the addition of these major cultural institutions is positive for Dallas and the community, the Arts District will never achieve the quality of place and “destination” that its masterplan intends until the area is able to introduce viable commercial and housing components as well. One component of this thesis addresses this issue and uses the intentions and potential of the Arts District to help generate new viable program combinations to bring across the highway. The need for a new performing arts center and a museum of natural history are two major cultural institutions whose program can be combined with housing, office, commercial, and the highway. By aggressively grafting other programs to the cultural component of this district, the area can begin to attract and service a wider range of people, and potentially make the area alive twenty-four hours a day.

nasher sculpture garden



24

meyerson symphony center



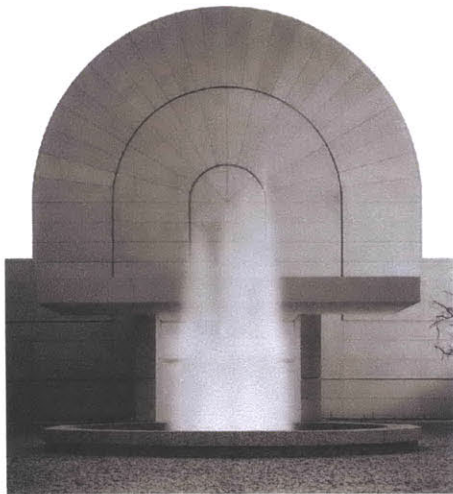
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fig. 22 Arts District rendering by Sasaki Associates.

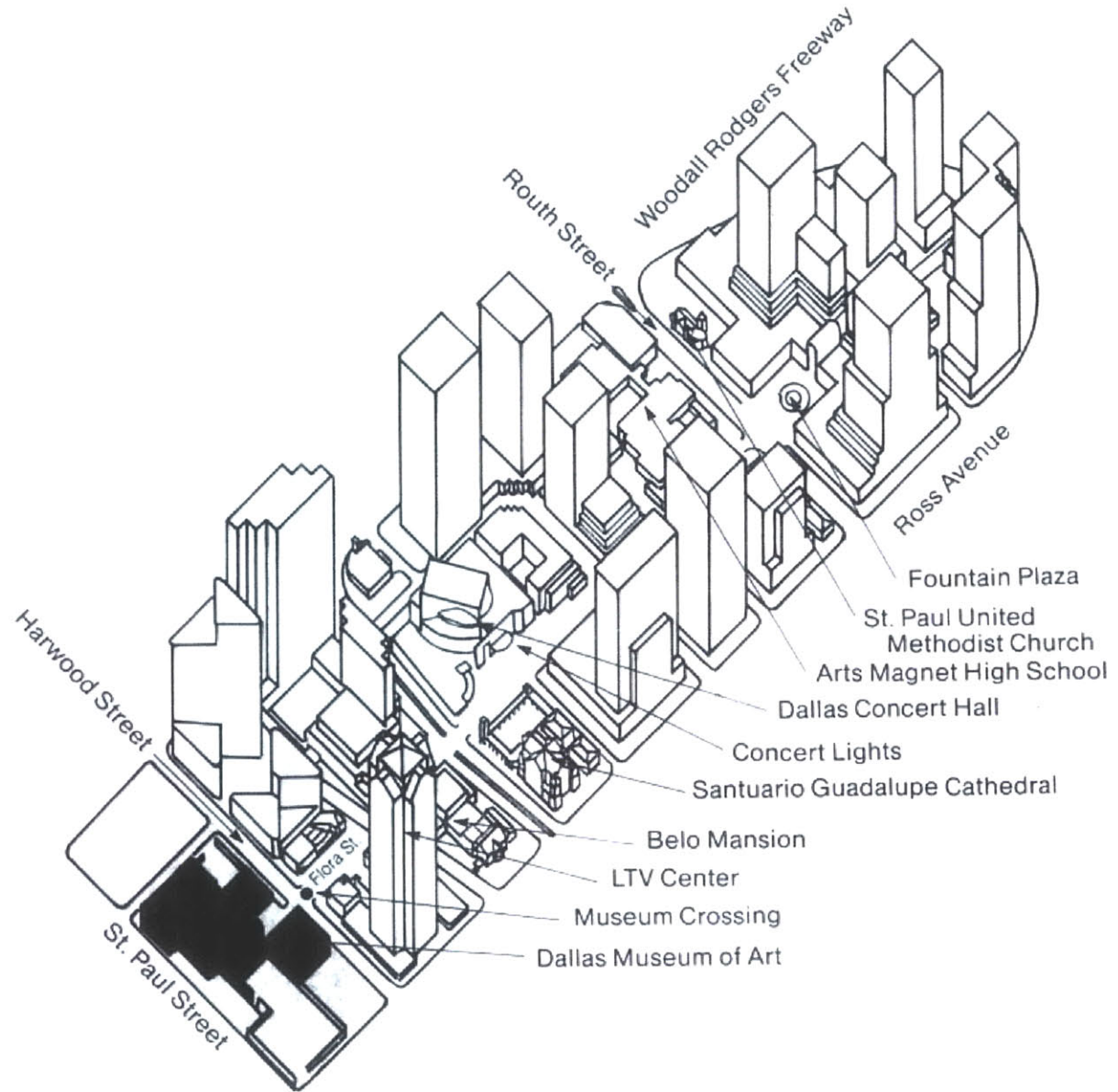
fig. 23 Arts District site plan (1990)

fig. 27 Axonometric of Arts District Plan

dallas museum of art



26



27

[downtown + uptown + the highway]

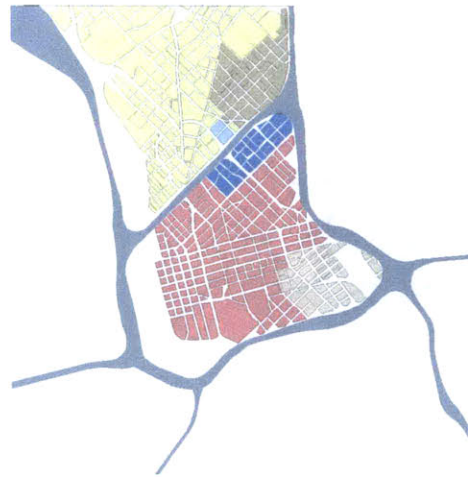
The relationship between downtown, the highway, and its surrounding neighborhoods can be examined through zoning strategies and physical relationships between neighborhoods. The **zoning** diagram below illustrates a clear definition of downtown and its uses (in red) to be contained within the enveloping highways. The Arts District (in blue) was developed after the construction of the Woodall Rodger Freeway and now nestles between downtown and uptown. One can only speculate how the Arts District may have developed and where it would be located (if it were developed as a district at all) if the freeway did not exist. The **highways + neighborhoods** diagram also shows how different neighborhoods are defined and detached from one another along the highway. The highway has a gravity for development, but has difficulty reconciling its adjacent neighborhoods with one another. The **max FAR** diagram illustrates the difference in density and potential physical height between downtown and uptown, with the freeway as the clear dividing line. Likewise, the **housing per 1,000,000,sf** diagram illustrates how the residential density is contained within uptown, still unable to bridge into downtown to support a more viable, urban environment.

downtown + uptown + the highway

central dallas

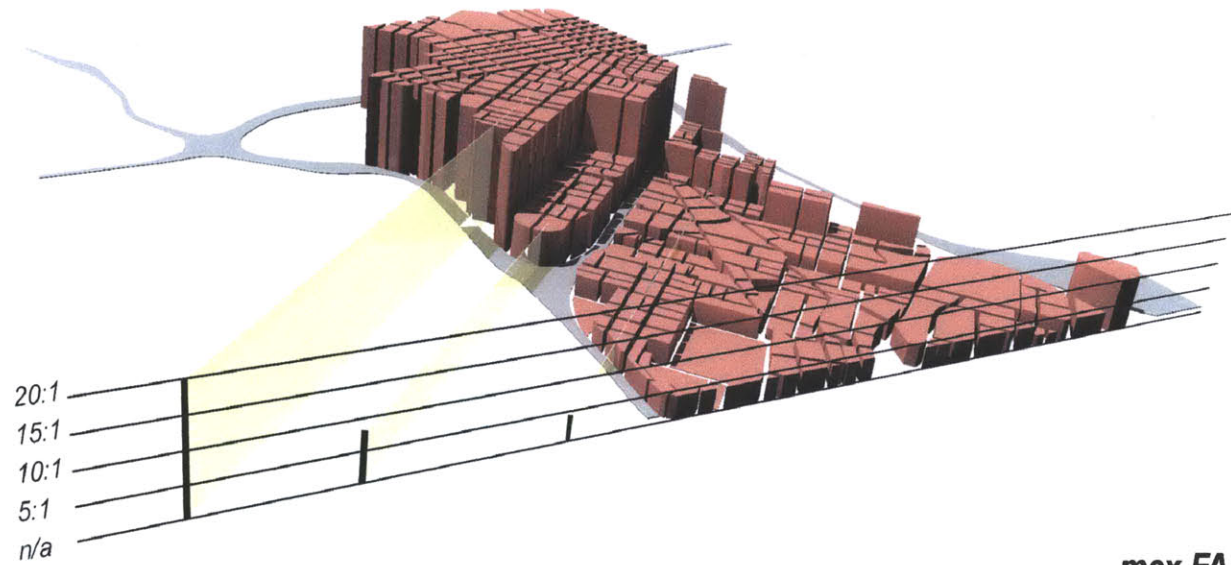


zoning

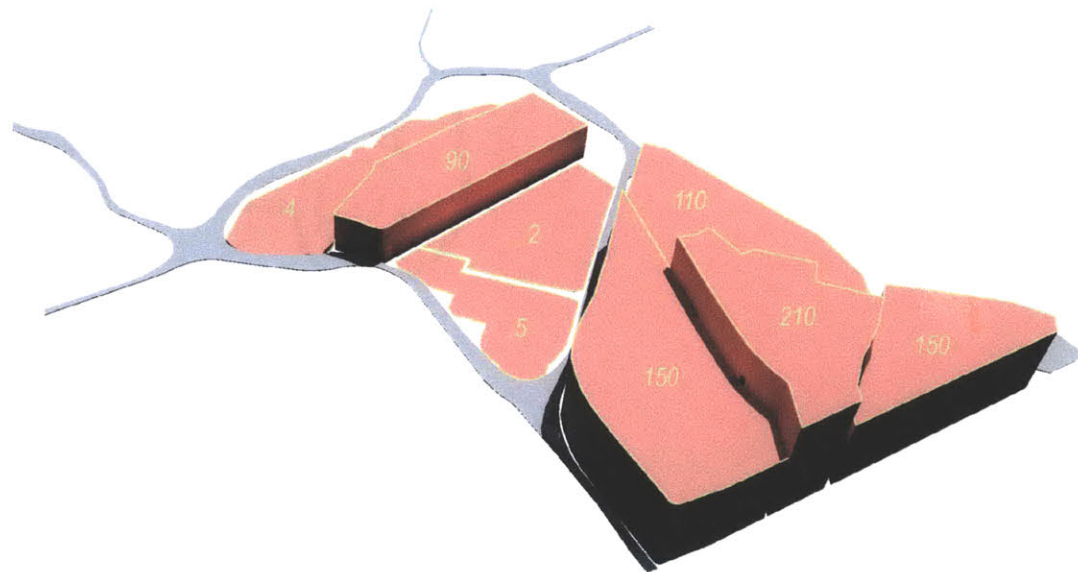


highways + neighborhoods





max FAR



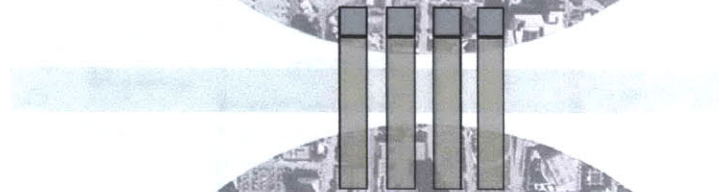
housing units per 1,000,000 sf

When architecture is declared as landscape, infrastructure as architecture, and landscape as infrastructure, then the predicament is given for potentially understanding the phenomenon city on other grounds than those conventionally pursued.

-Marc Angéll & Anna Klingmann, "Hybrid Morphologies"

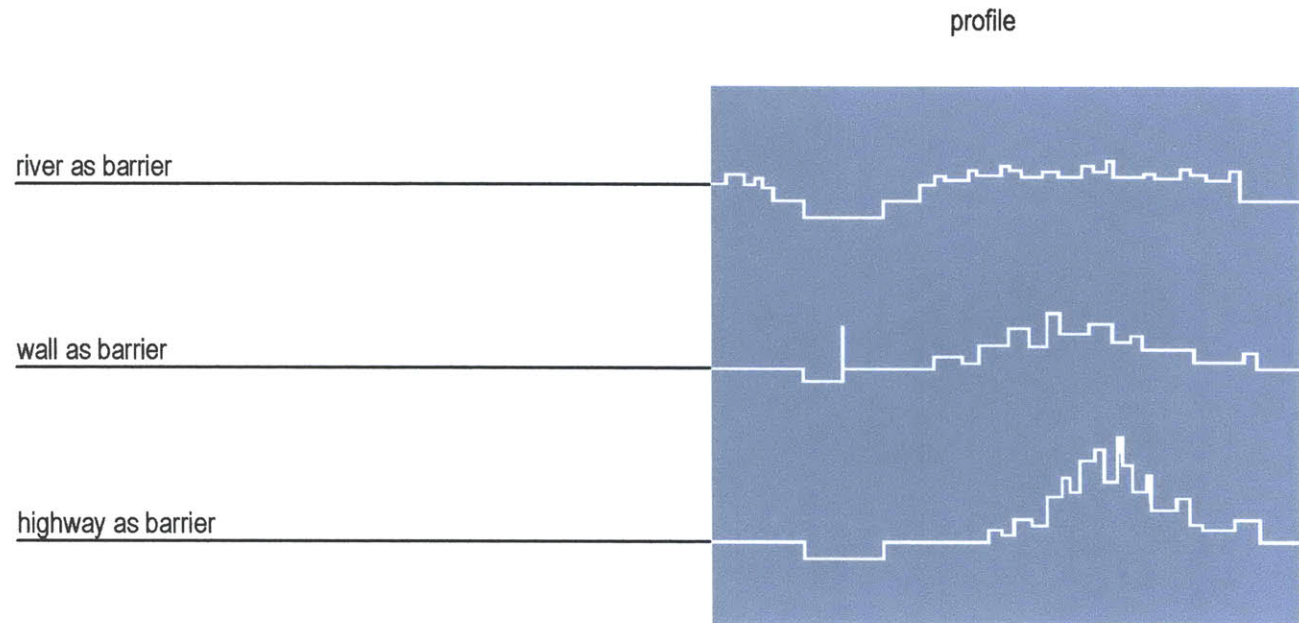
urban proposition crossing the freeway

45

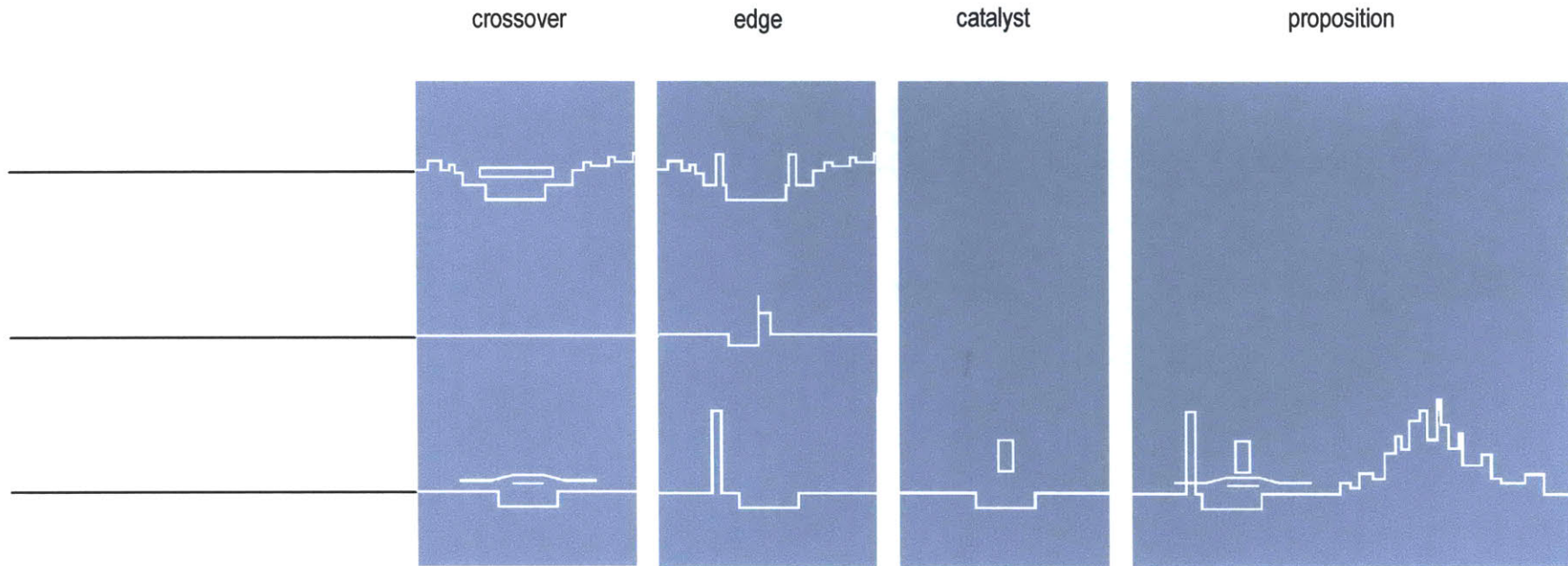


[urban proposition]

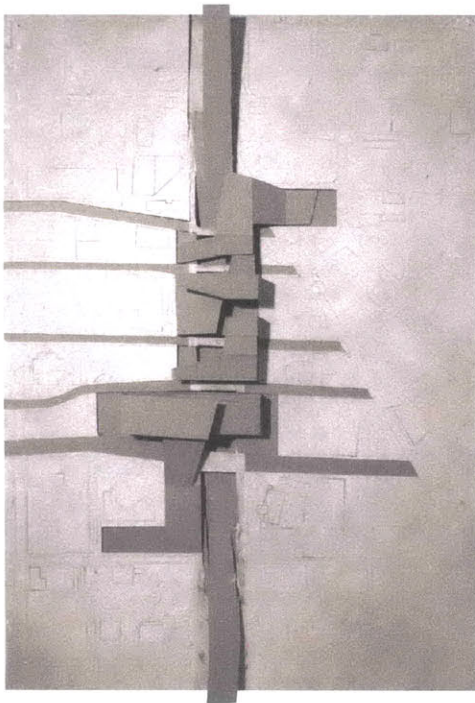
The urban proposition of this thesis focuses on the generic condition of the highway as it separates two different neighborhoods. The intent is to formulate a process or methodology that can knit two neighborhoods across the highway through the hybridization of architecture, infrastructure, and landscape. The highway condition exists as a barrier condition, physically imposing and difficult to cross as a pedestrian. Other barrier conditions in other types of cities were studied to generate an urban and architectural strategy. The condition of the river as a barrier and the medieval wall as a barrier, and the means by which these barriers were absorbed by architecture and program helped to identify a strategy to bridge across the highway. In the river condition, the concept of **crossover** has been achieved in history through the inhabited bridge. The concept of densifying the **edge** has also been used in both the river condition and the wall condition. Medieval cities and hill towns have often grafted programs and buildings to the walls initially constructed for defense. Likewise, these concepts of **crossover** and **edge** can be used in a strategy to overcome the autonomy of the highway condition. In addition to these concepts, the idea of a **catalyst** within the system is added to the site strategy to extend the urban and architectural possibilities. Can the highway not only be a construction which we drive through or experience in an automobile? Can the highway also become inhabited and experienced architecturally?



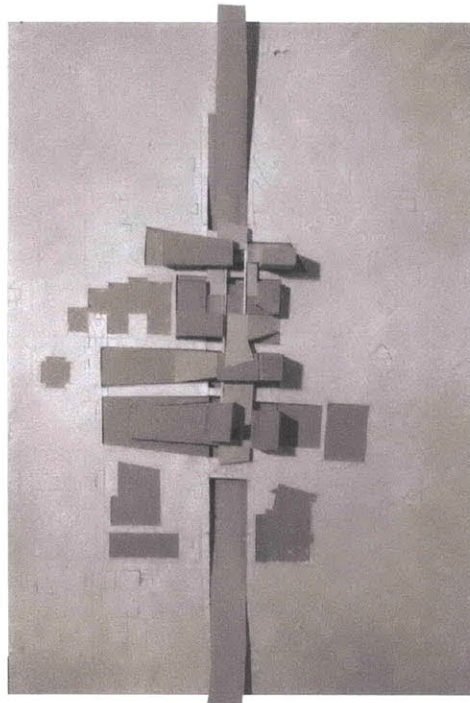
The concept of the **catalyst** proposes the grafting of architecture and program directly over, and running parallel to, the highway itself. If part of the site strategy is to bridge across the highway with a series of expanded, landscape forms of the inhabited bridge building running perpendicular to the highway, then the catalyst, running parallel to the highway can connect these bridge buildings. The intersection of the bridge buildings and the catalyst component has the potential to form a new type of urban plaza suspended over the highway. The catalyst also contributes to the scheme by creating a definitive “destination” for the site by providing a heavy retail component as well as meeting spaces and exhibit spaces. The intention is to form a strategy combining buildings and landscapes along and across the highway to form a new pedestrian system able to reconnect downtown with uptown.



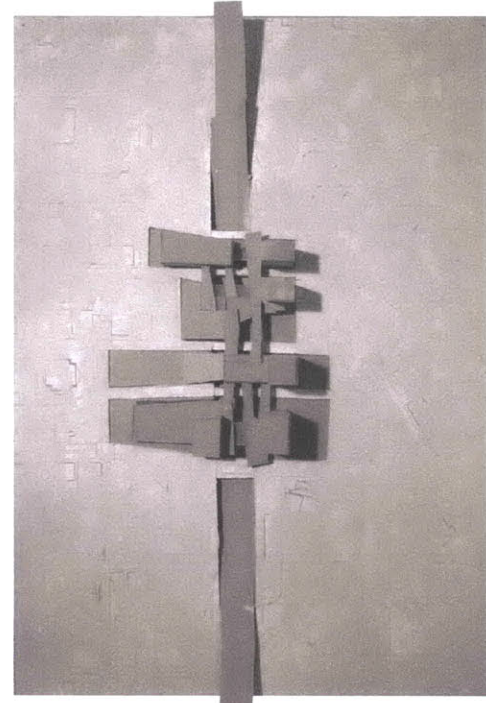
sketch model 1



sketch model 2

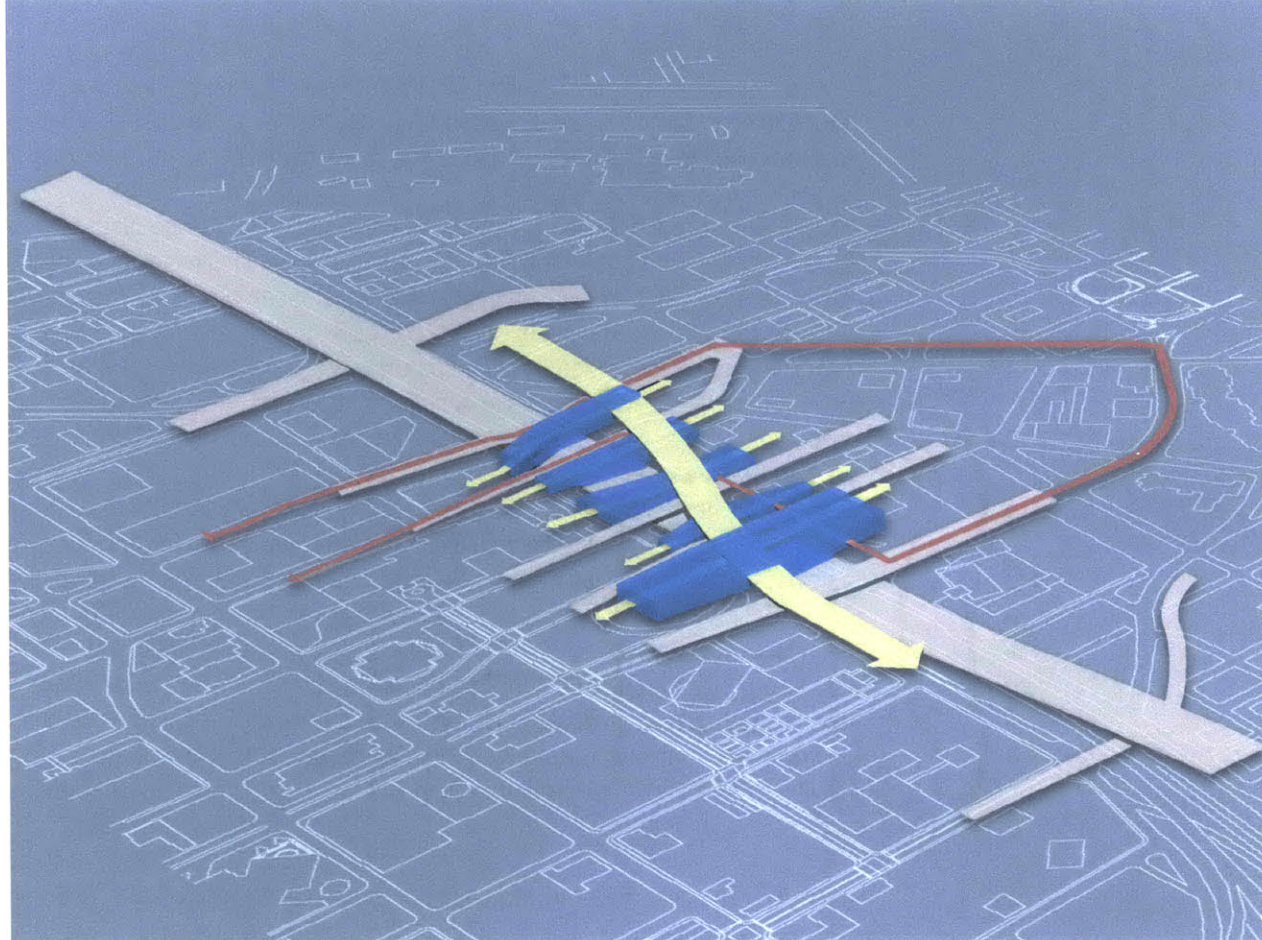


sketch model 3



left: Initial study models at 1"=200' used to resolve the intentions of the urban strategy. **Model 1** illustrates the first intention of the urban scheme as a single, homogeneous, megastructure. **Model 2 & 3** began to revise the urban scheme into a series of components unique to each other and more driven by program.

right: Urban diagram isolating the intentions of flows across and with the highway.



[site strategy]

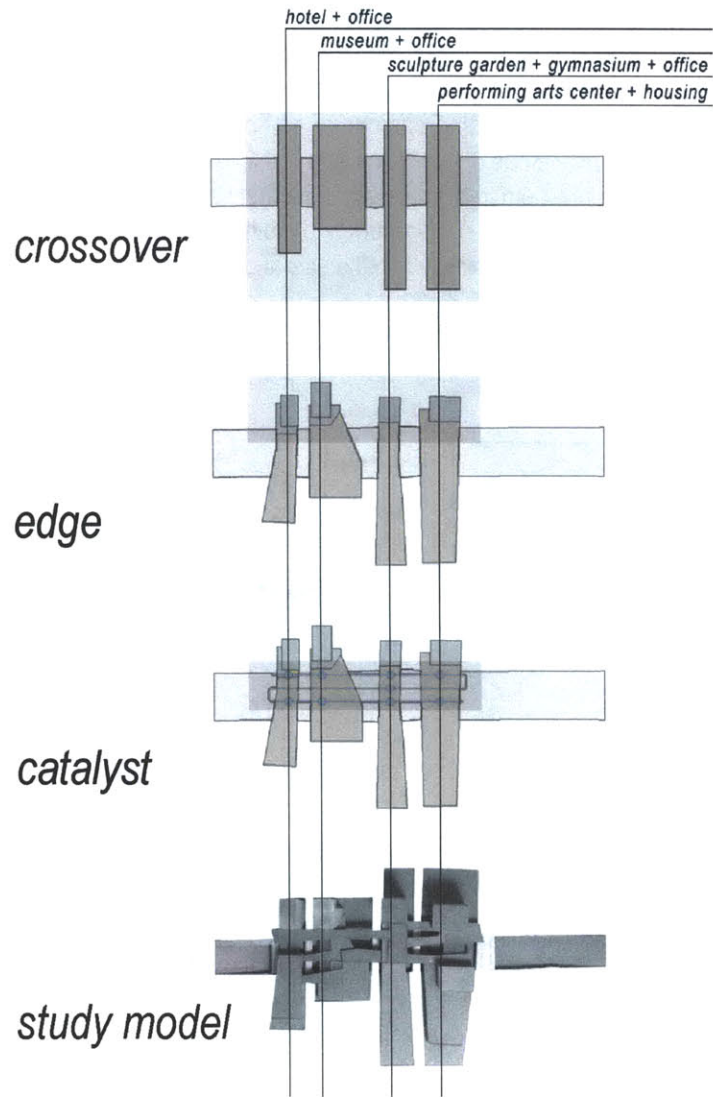
Based on research regarding other barrier types in other cities, and based on a desire to not have a single, monolithic structure enveloping the site, the intention to approach the site through a series of was investigated. The site strategy for reconnecting these two neighborhoods across the highway can be defined by three primary design moves:

crossover: The first phase is to introduce a series of bridge buildings across the highway. The width of each bridge building is that of its corresponding city block, its height is minimal, and its roof acts as a new pedestrian access across the highway, so its form and dimension will reflect more landscape than building. The program of each bridge building will feed off of the needs and existing buildings in the Arts District, providing for a rich and diverse possibility of program combinations. Each bridge building can exist independent from the others, allowing for the site scheme to be phased in, not relying on a completed site scheme for success. The intention is that this first move of crossover immediately responds to the issue of the highway as a barrier, and each bridge building achieves this independently.

edge: The next phase is to build on these proposed bridge buildings and redefine the edge of downtown through a series of high-rise towers. The architectural edge of downtown today is vague and undefined. There are no architectural gateways or thresholds, so the surrounding highway forms the only physical edge of downtown. The concept of the edge is to redefine the architectural edge of downtown to the uptown side of the highway (including the highway within the boundary of downtown). A series of high-rise towers as the edge can potentially stimulate two areas of growth. The edge towers can promote the infill and densification of space between it and the existing high-rise towers of downtown blocks away. Simultaneously, because the towers are on the uptown side of the highway, they can stimulate growth and development in uptown toward the more developed areas to the north. Even more important is the fact that the towers can serve as a known physical transition and threshold between downtown and uptown, a condition that currently does not exist.

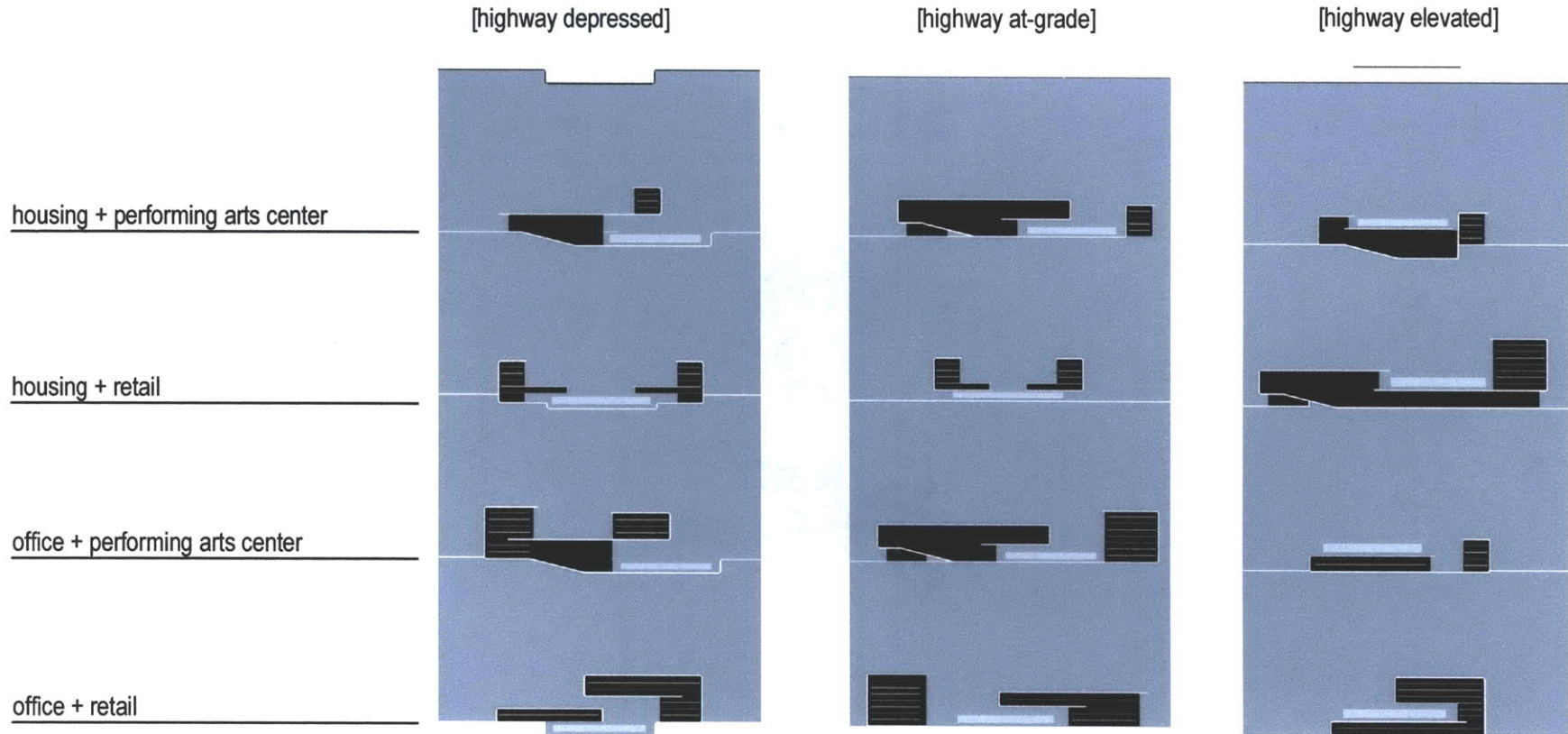
catalyst: The final phase involves connecting these landscapes of bridge buildings through an architectural and urban catalyst. The intention of this component of the project is to establish a continuity among the other components through connections and to create a “destination” for the site. Each of the bridge buildings are programmed according to factors and influences of the existing context (namely the Arts District), but the catalyst component is free from these associations and deals with the highway in its most generic sense. Because this component of the project exists directly above and runs parallel with the highway, it can be viewed in the most generic sense, that is, this component of the project can be seen as a condition almost anywhere above almost any highway. The relevance of this is to provide a scenario in which the relationship between architecture and highway infrastructure can be investigated without the surrounding context in mind.

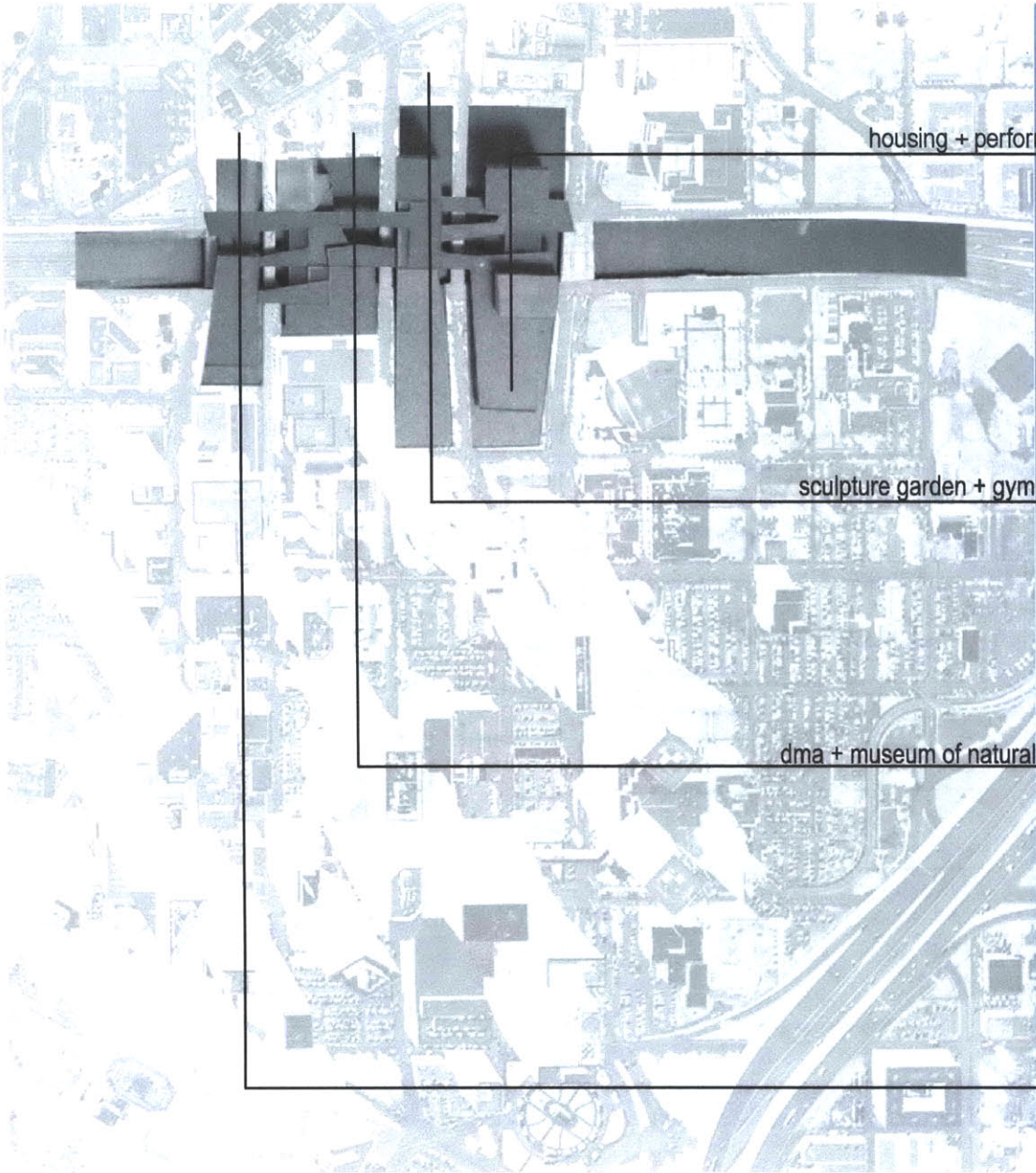
right: urban proposal diagram showing primary components of the site strategy to first cross over the highway, then establish a new architectural edge for downtown, then connecting the system with an urban/architectural catalyst.



[programming]

The definition of each bridge building is formulated by the existing needs and context of the site. The Arts District provides a rich array of programs and needs upon which these bridge buildings can be developed. Among these existing elements are the Meyerson Symphony Center, The Dallas Museum of Art (DMA), the construction of the new Nasher Sculpture Garden, and the need for a performing arts center and a new museum of natural history. There is also a growing need for housing in this area as well as office space and retail. The intention is to find a way to combine these programs in a disparate fashion and apply them to the highway. The first step was to explore these program possibilities across different conditions of the highway (depressed, at-grade, and elevated) as design section exercises in a generic manner, then later apply some of these section possibilities with the site and context in mind.



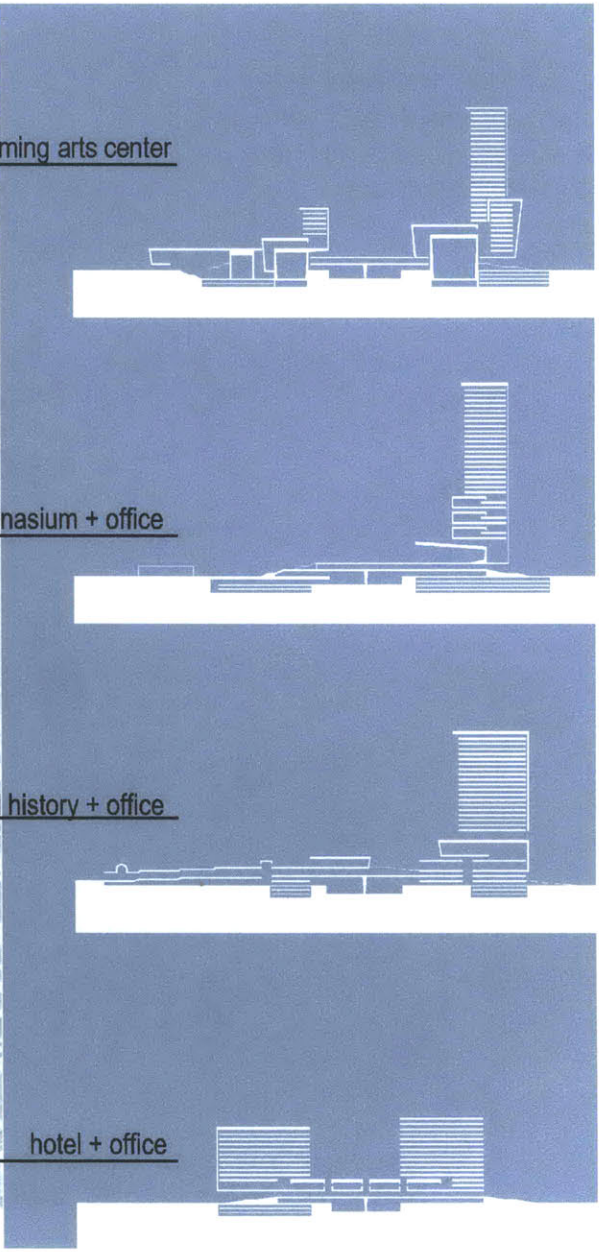


housing + performing arts center

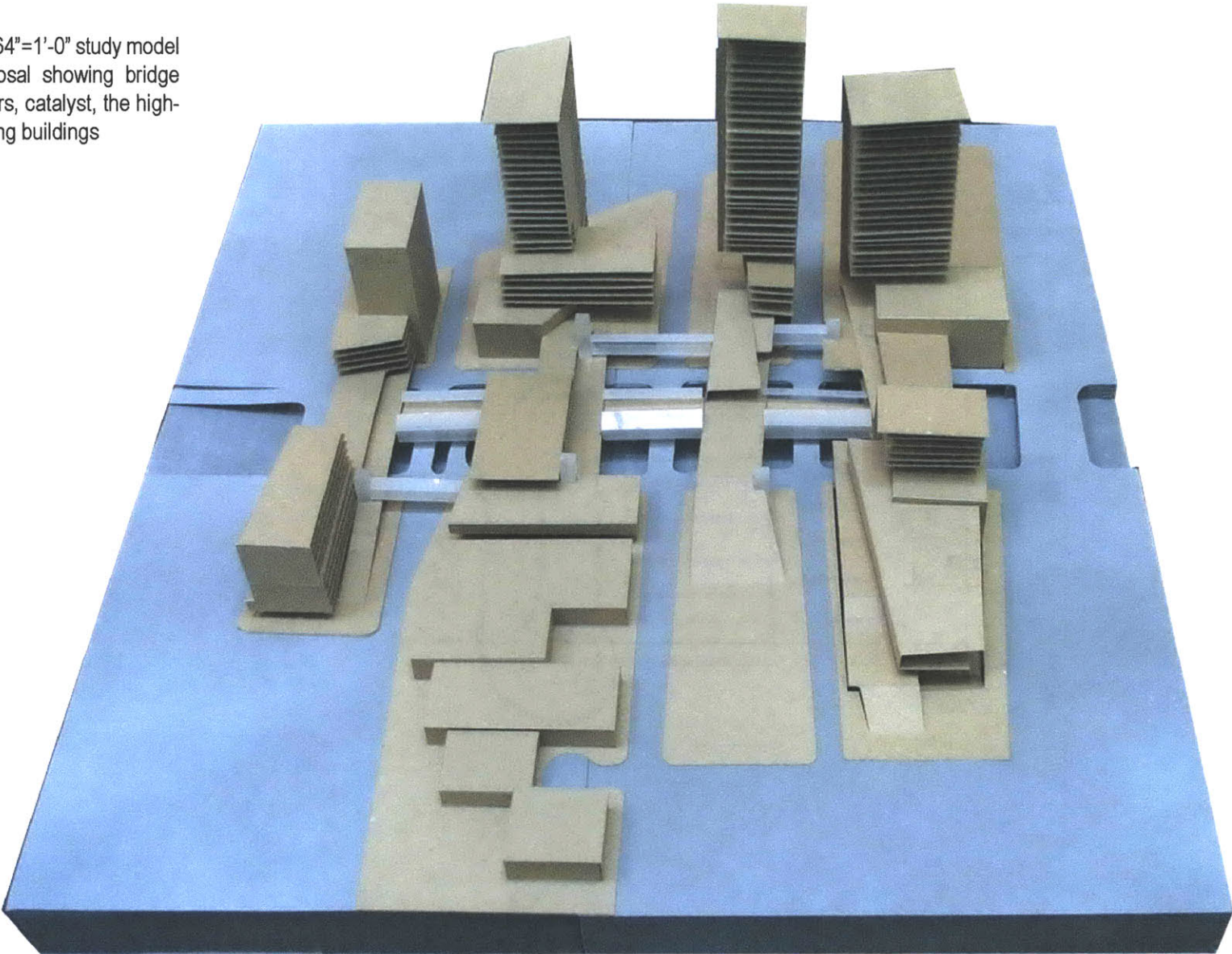
sculpture garden + gymnasium + office

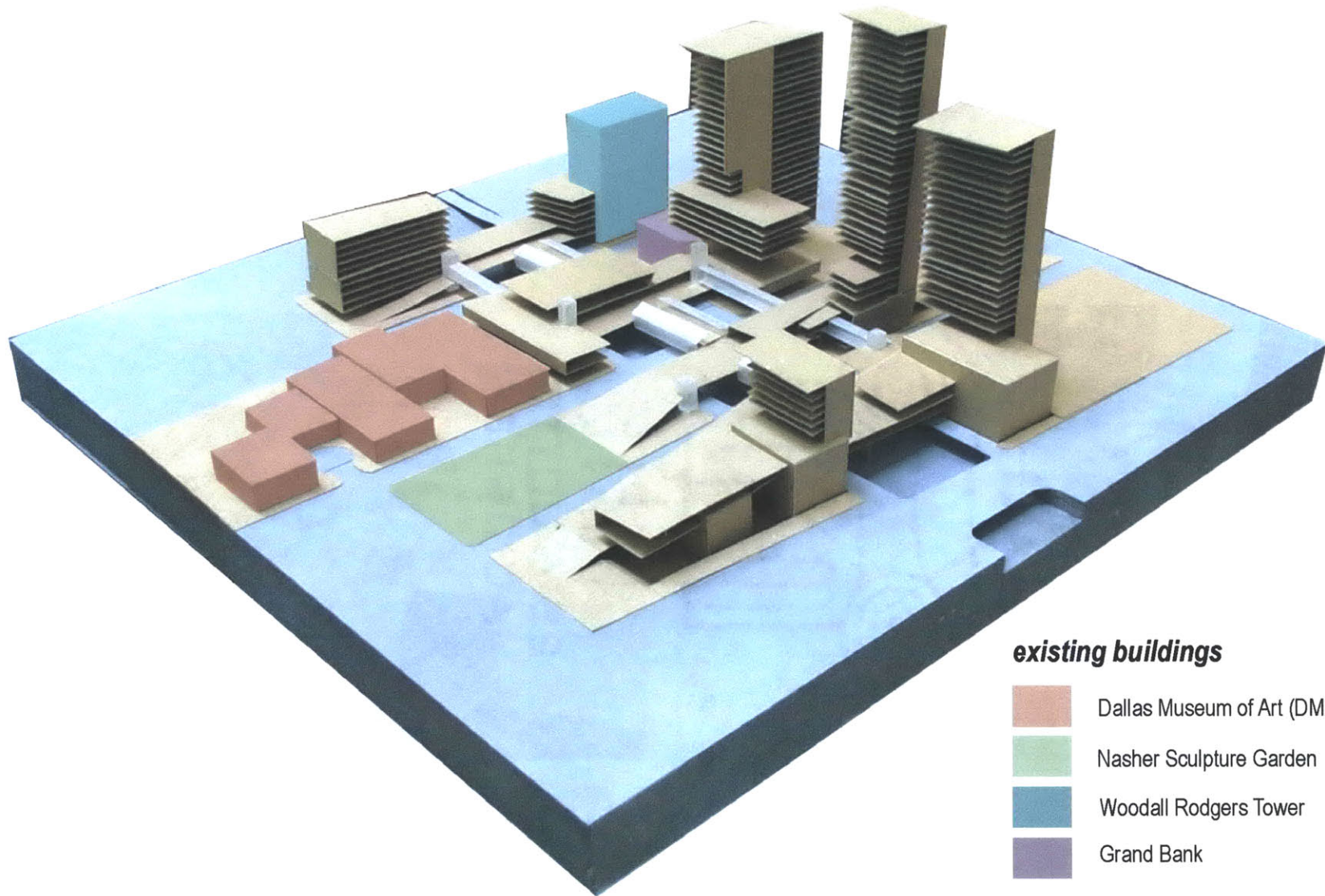
dma + museum of natural history + office

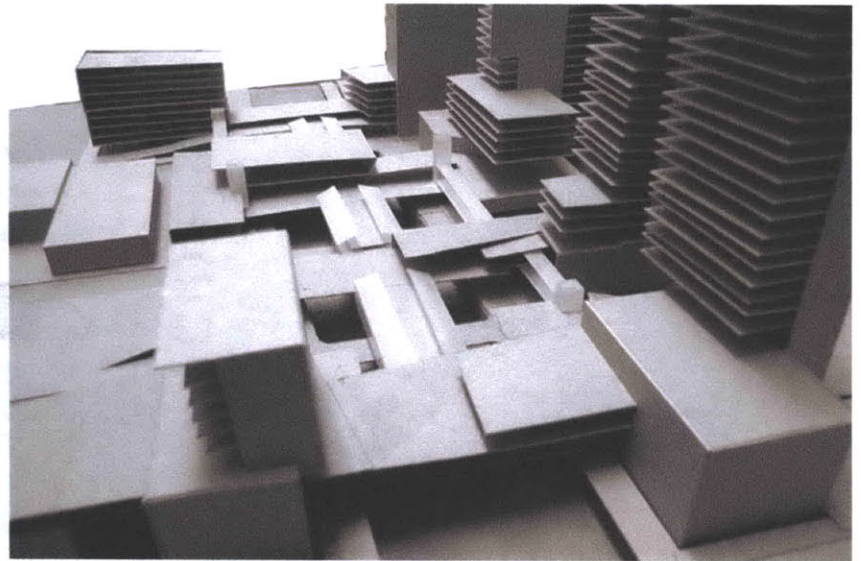
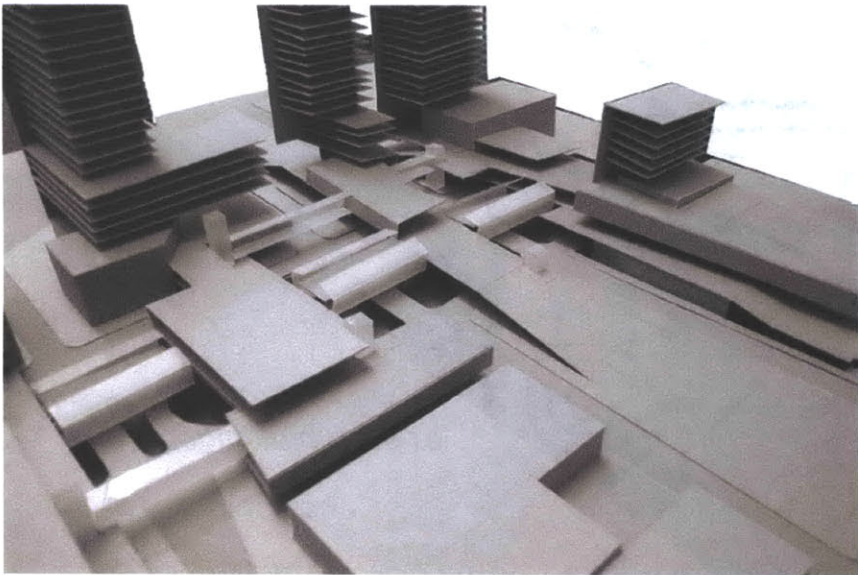
hotel + office

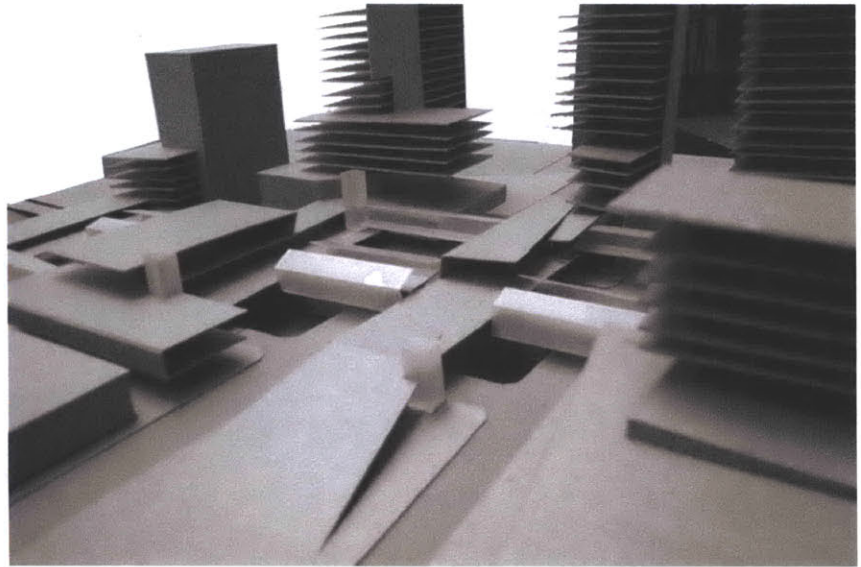
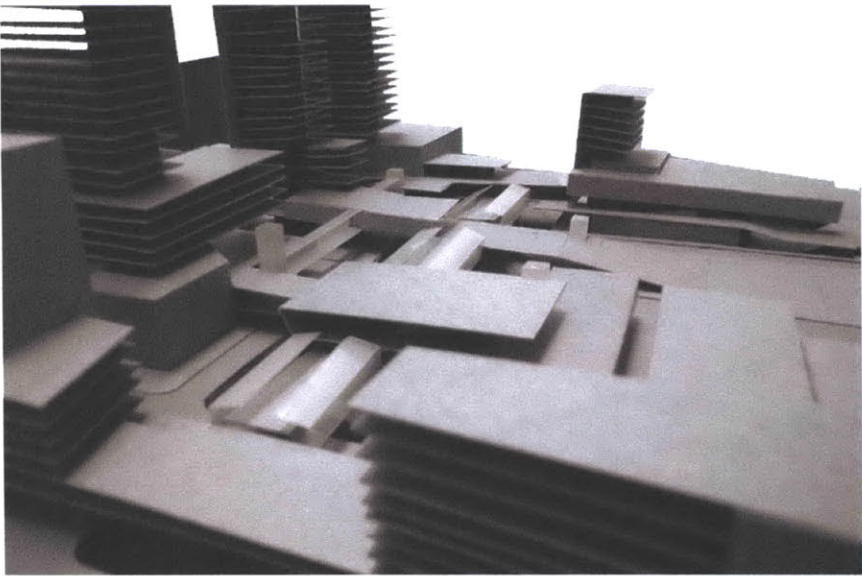


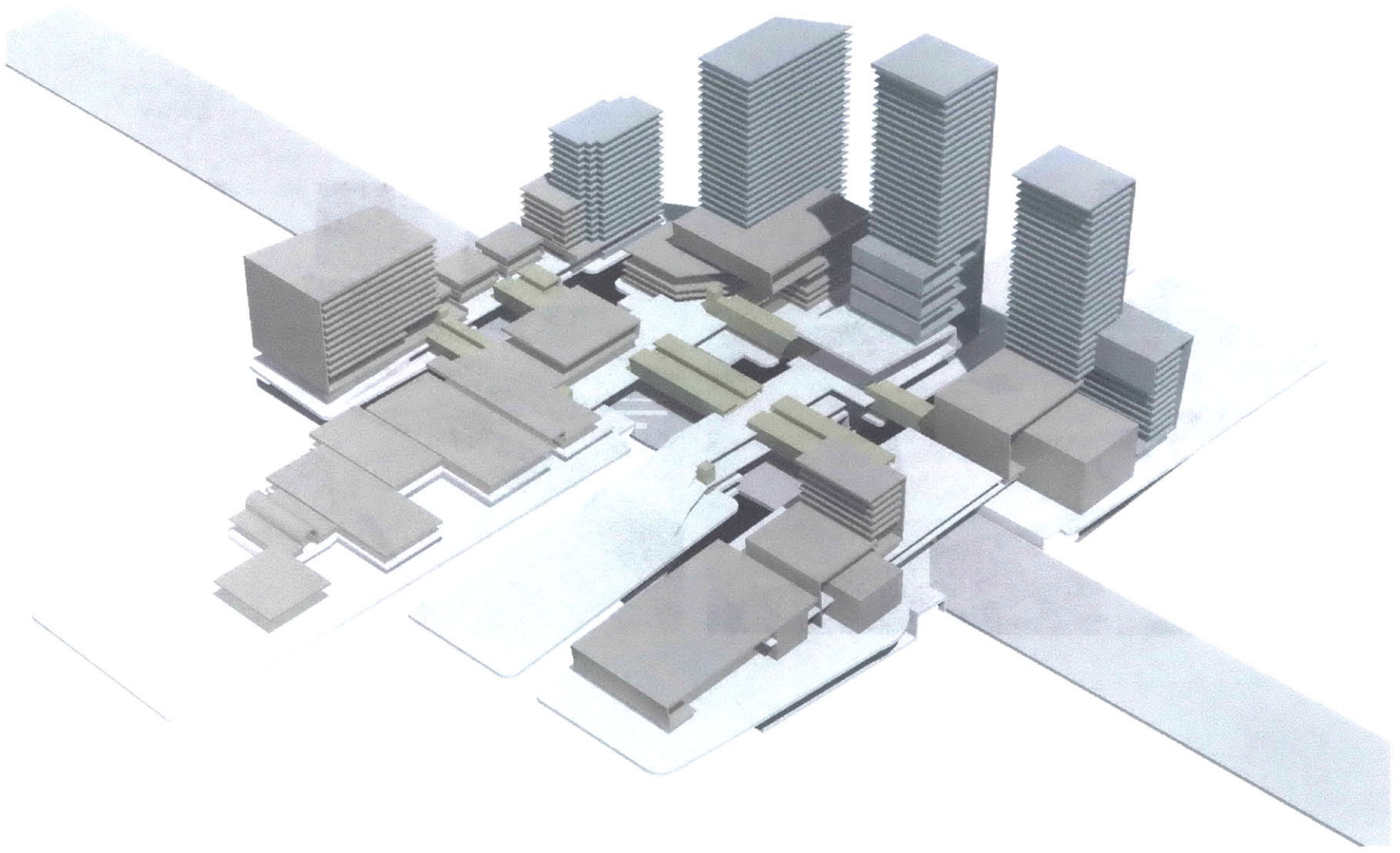
54 | both pages: 1/64"=1'-0" study model of urban proposal showing bridge buildings, towers, catalyst, the highway, and existing buildings







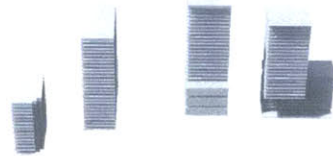




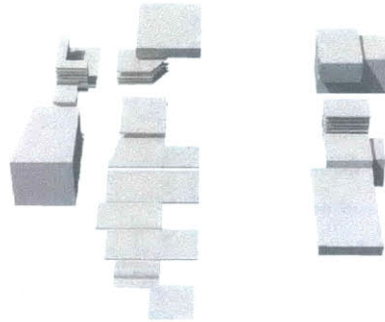
building as connection



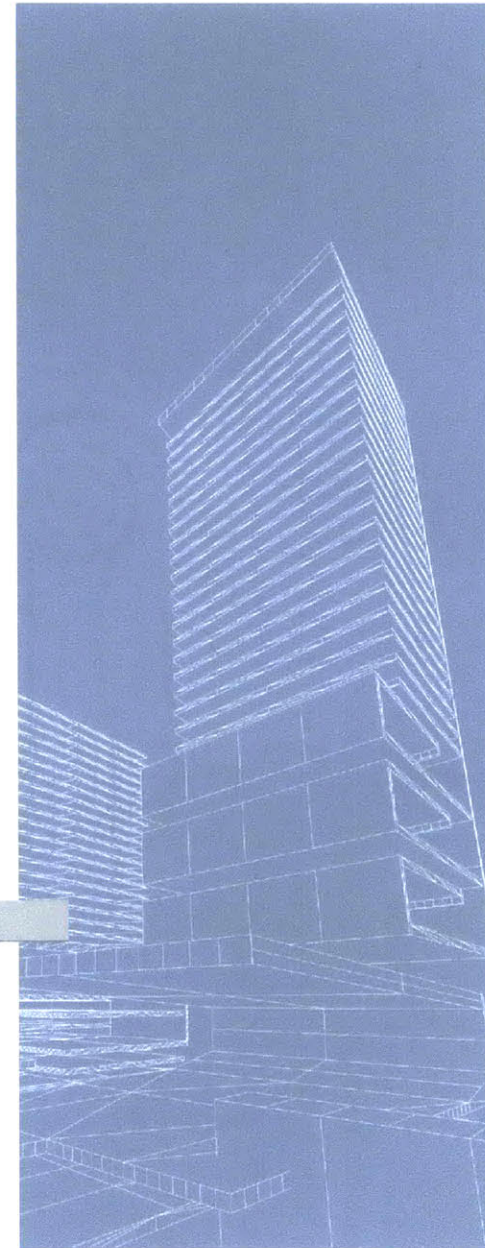
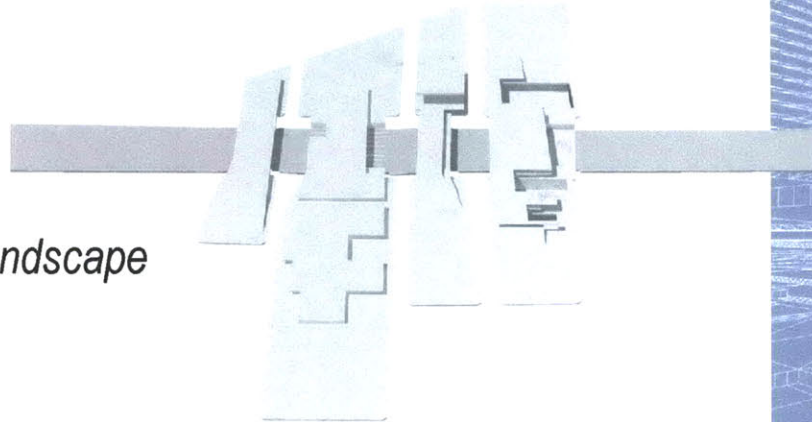
building as tower

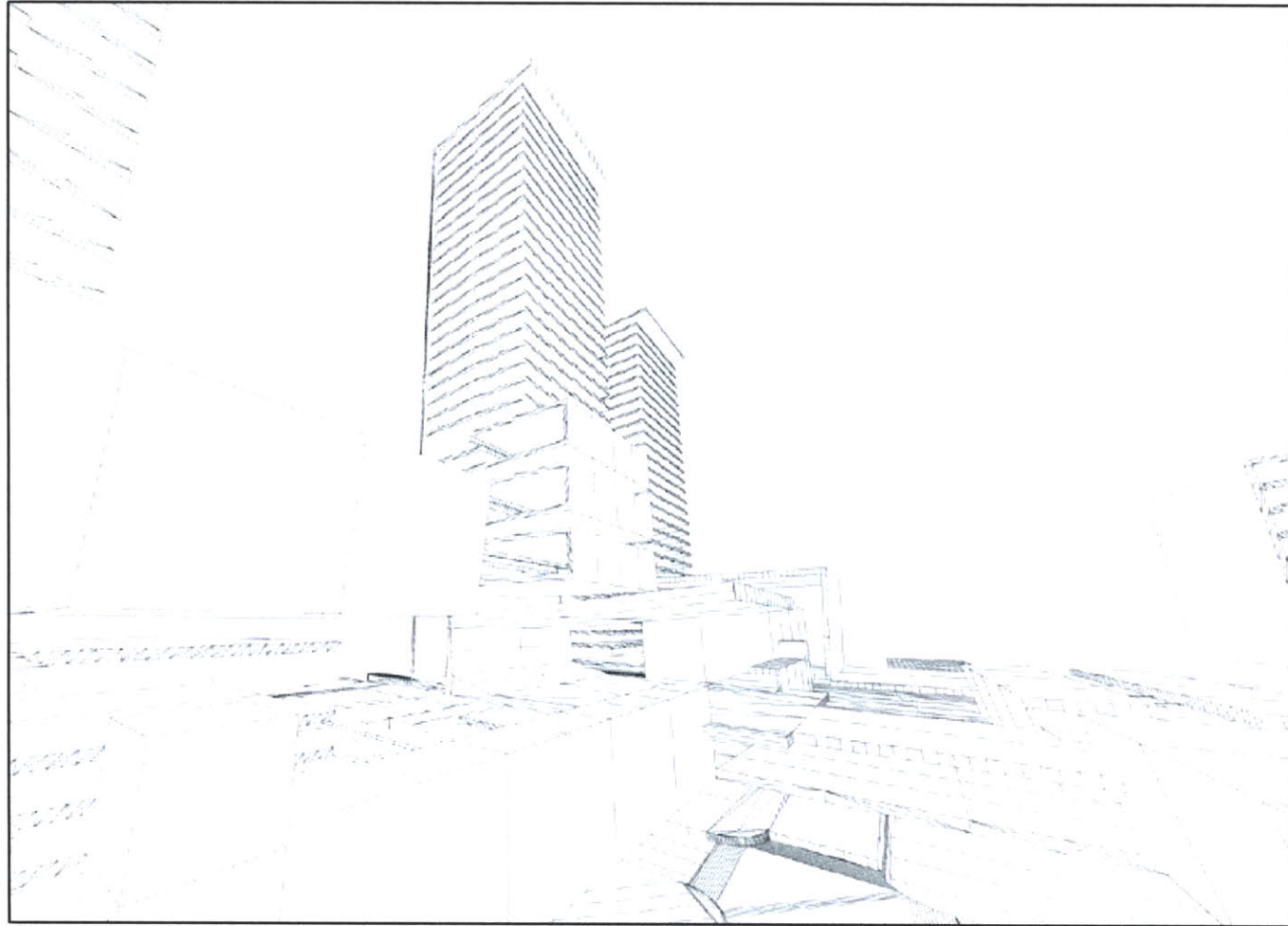


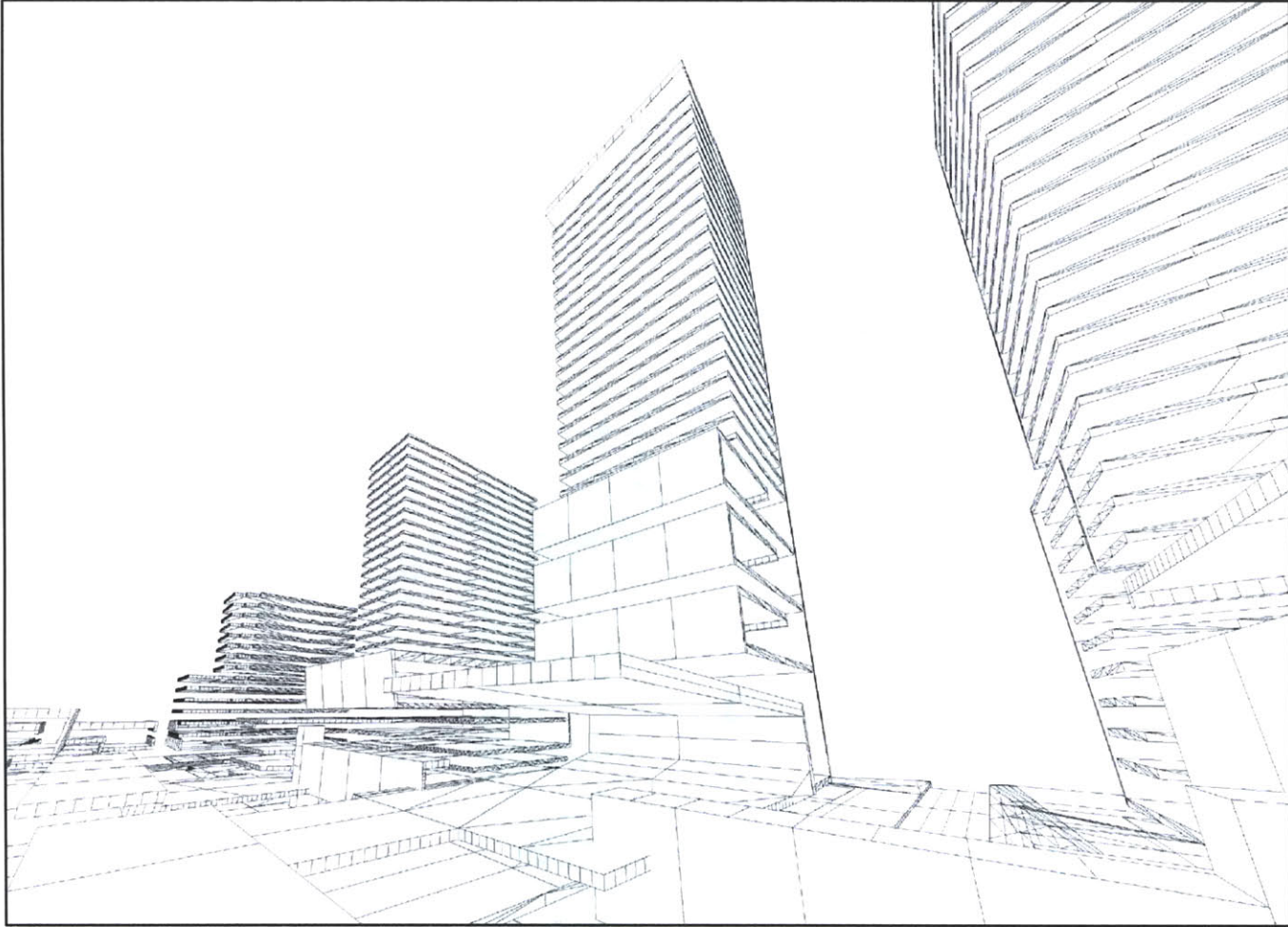
building as object



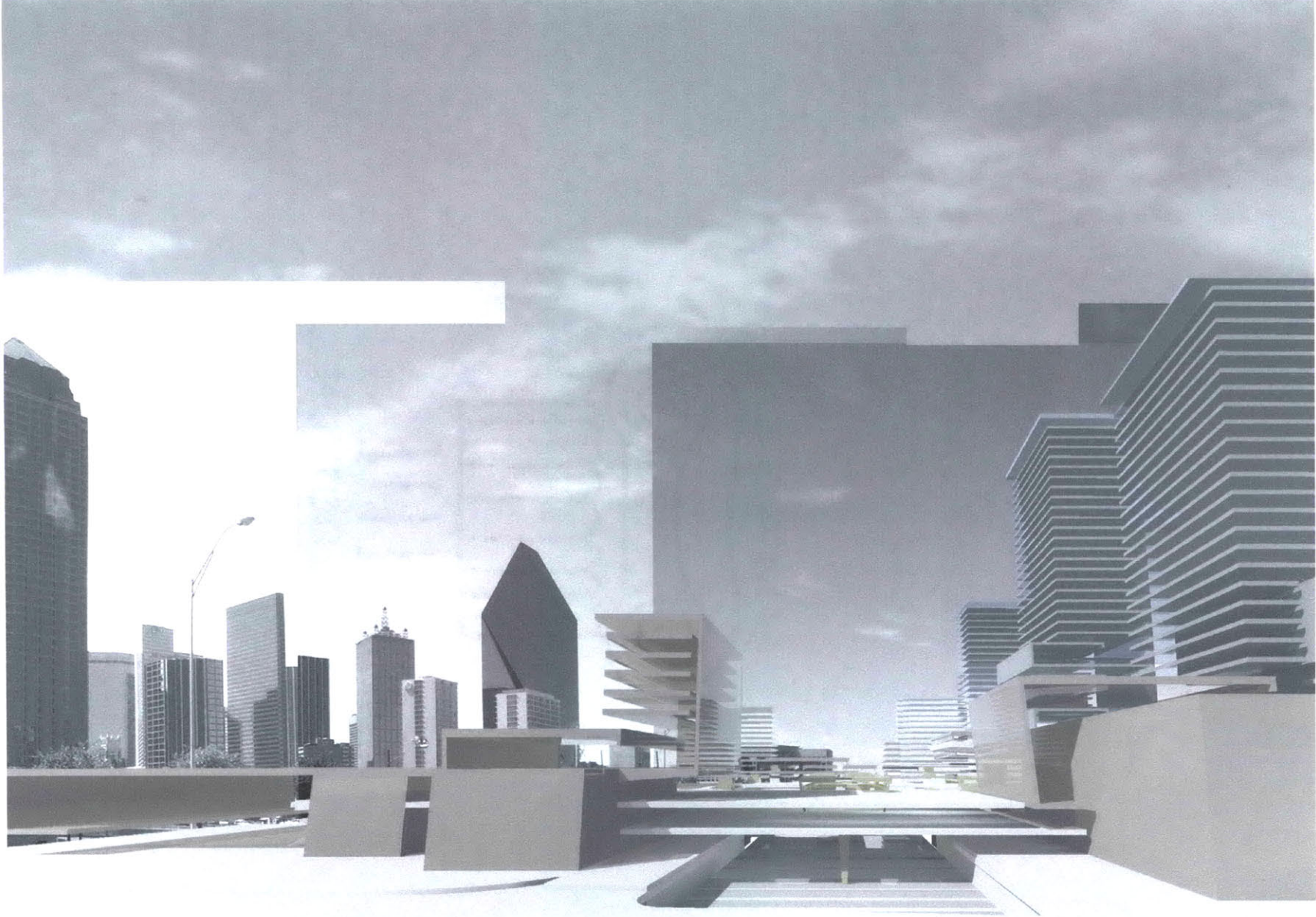
building as landscape









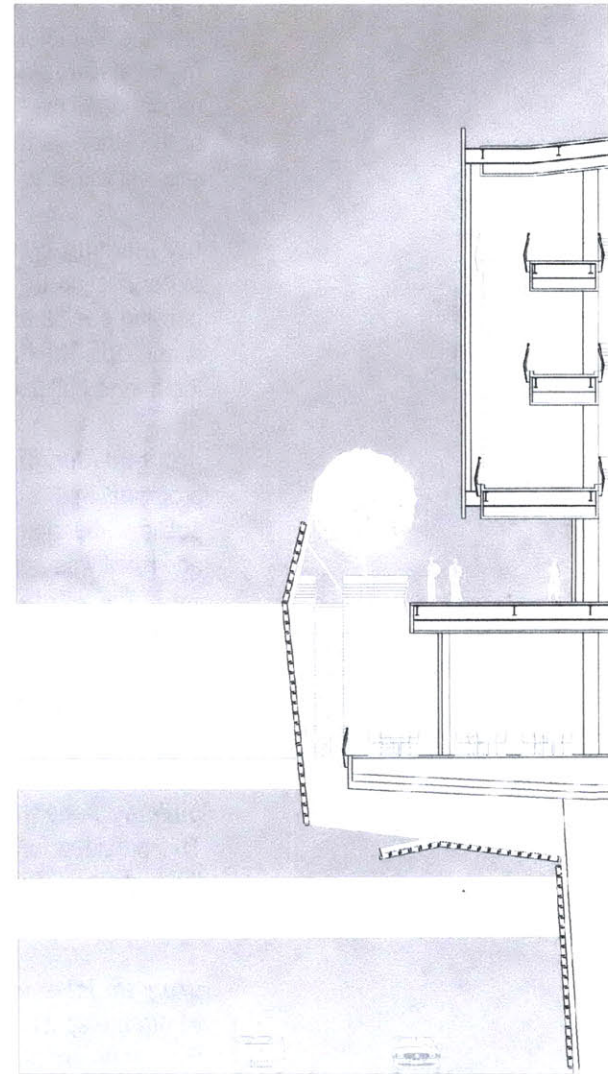


The architecture of hybridization, the fluent merging of constituent parts into an endlessly variable whole, amounts to the organization of continuous difference, resulting in structures that are scale-less, subject to evolution, expansion, inversion, and other contortions and manipulations. Free to assume different identities, architecture becomes endless.

-Van Berkel + Bos

architectural proposition crossing the freeway

65



[architectural proposition]

After the site strategy was investigated and a proposal produced, the opportunity to focus on one portion of the proposal arose. Because the urban proposal consisted of four bridge buildings, four towers, and a building directly over the highway, it was obvious that addressing all of the components on an architectural level would be impossible. After considering the intentions of the thesis, the building running over and parallel with the highway, (now referred to as the **highway-building**) seemed the most appropriate portion to further investigate. This highway-building is of particular relevance to the thesis because it addresses the highway in its most generic condition, never formally landing on one side or the other. In this manner, the immediate architectural project and investigation is no longer tied to Dallas as a specific site, but rather to the highway as the generic site.

bar building type: The first step in the consideration of this highway-building was to understand its primary functions of connecting the bridge-buildings to each other and creating a stand-alone “destination” component for the site. The building begins as a bar-building type with the understanding that it will undergo a series of transformations as program is applied. The bar-building type is appropriate as a starting point because its linear configuration is able to both connect the bridge buildings as well as respond to the directionality of the highway.

program identification: In developing the program for this component, it was decided that it should be a combination of programs that could benefit the other site components as well as the city at large. Therefore, programs that could address public gatherings and events at different scales were explored, and the combination of auditoria, exhibitions, classrooms, and retail was appropriate and potentially formally interesting.

program integration: The program was then arranged within the bar building in a manner that was rational and advantageous for each program. The most public retail program would occupy the new ground level addressing a new pedestrian street, the auditoria would be arranged as to be able to share lobby and service spaces, and the classrooms and exhibition spaces would occupy the upper floors to receive the most light and potential privacy.

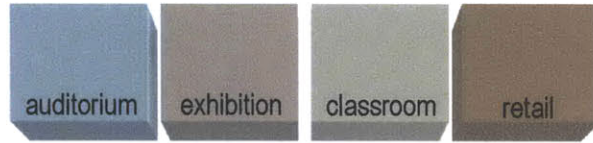
building separation: The highway-building was then separated at its points of intersection with each bridge-building. This provided for reasonable points of entry into the building as well as unique urban plazas at these intersections over the highway. This urban condition allows for the crossover across the highway as well as a new pedestrian street above and parallel to the highway.

program intersection: These points of intersection were then developed as primary entry lobbies as well as the point where the spatial integration of the different programs could occur. These spaces become critical in the reconciliation of these different programs and provides a space of orientation for the visitor.

bar building type



program identification



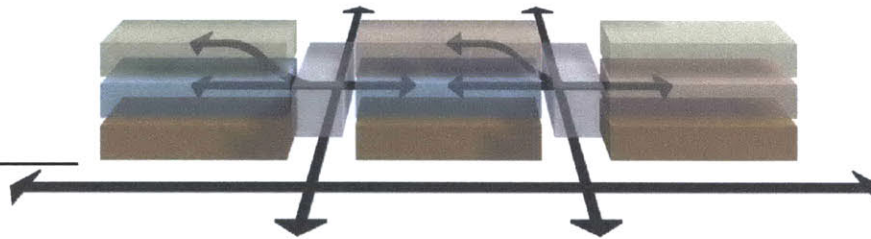
program integration



building separation

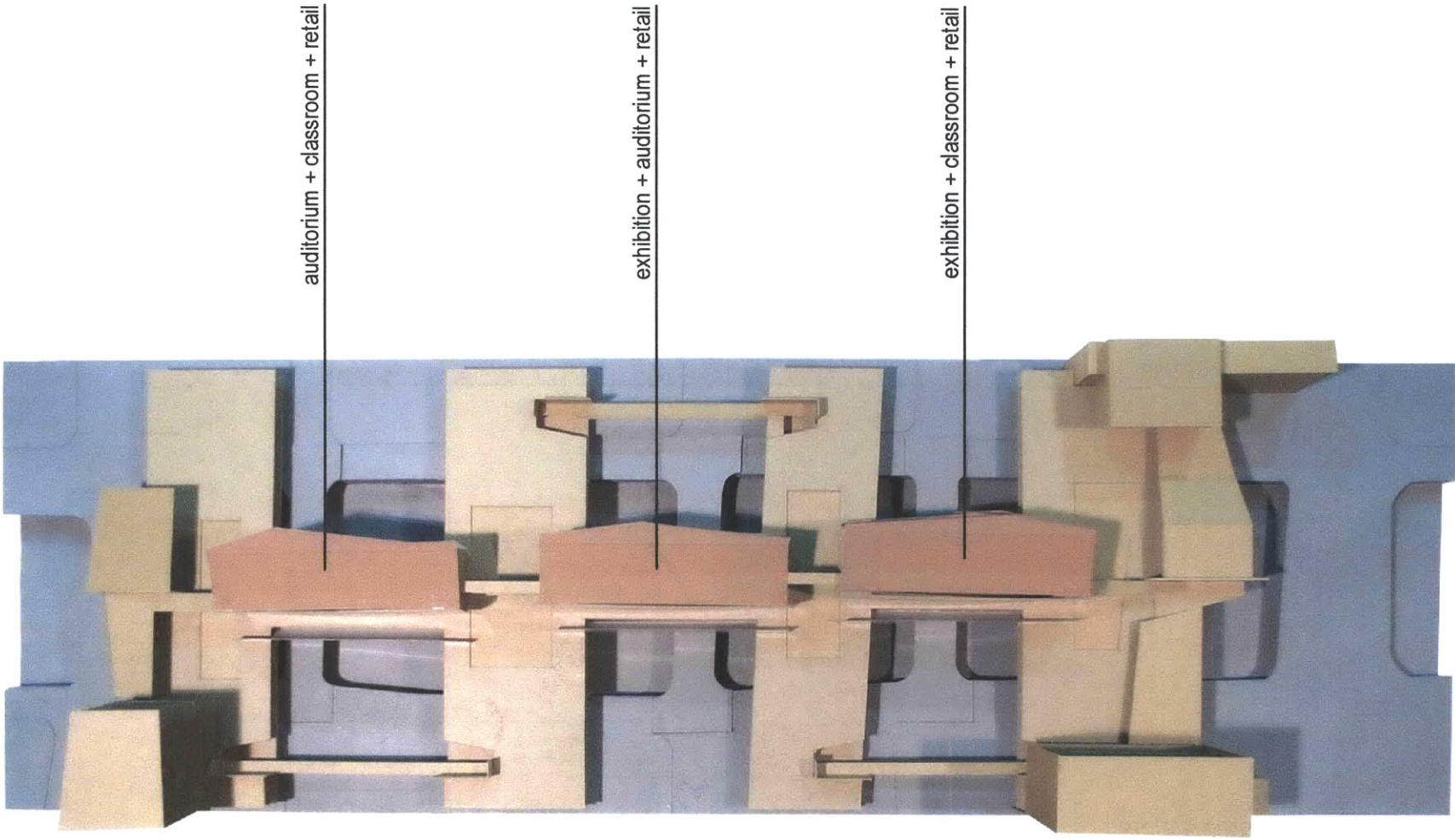


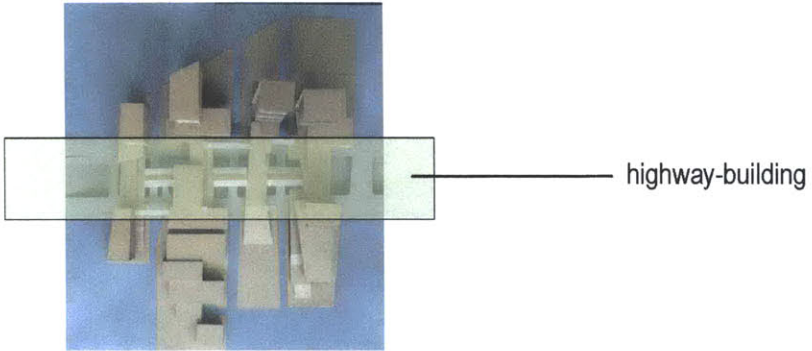
program intersection



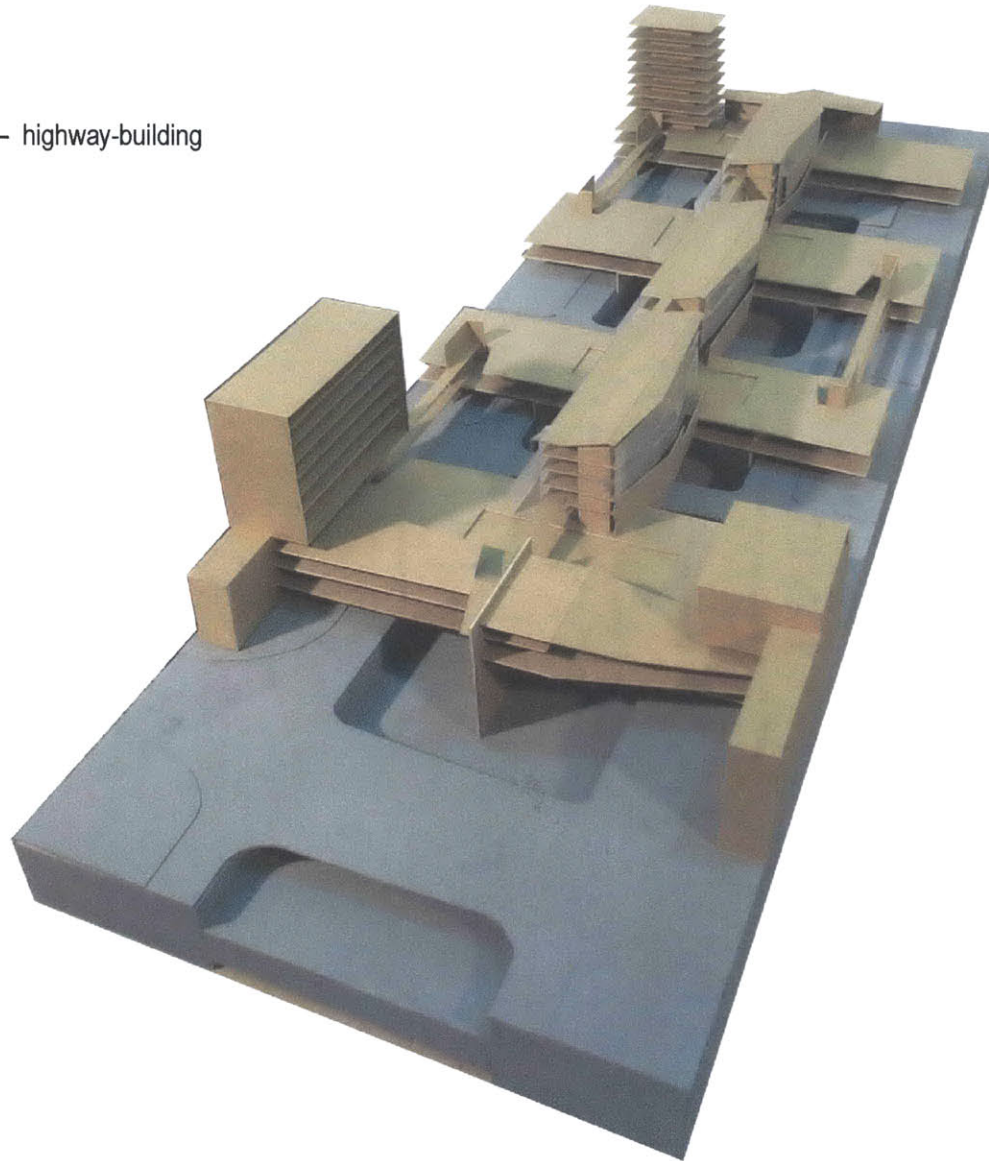
program operations

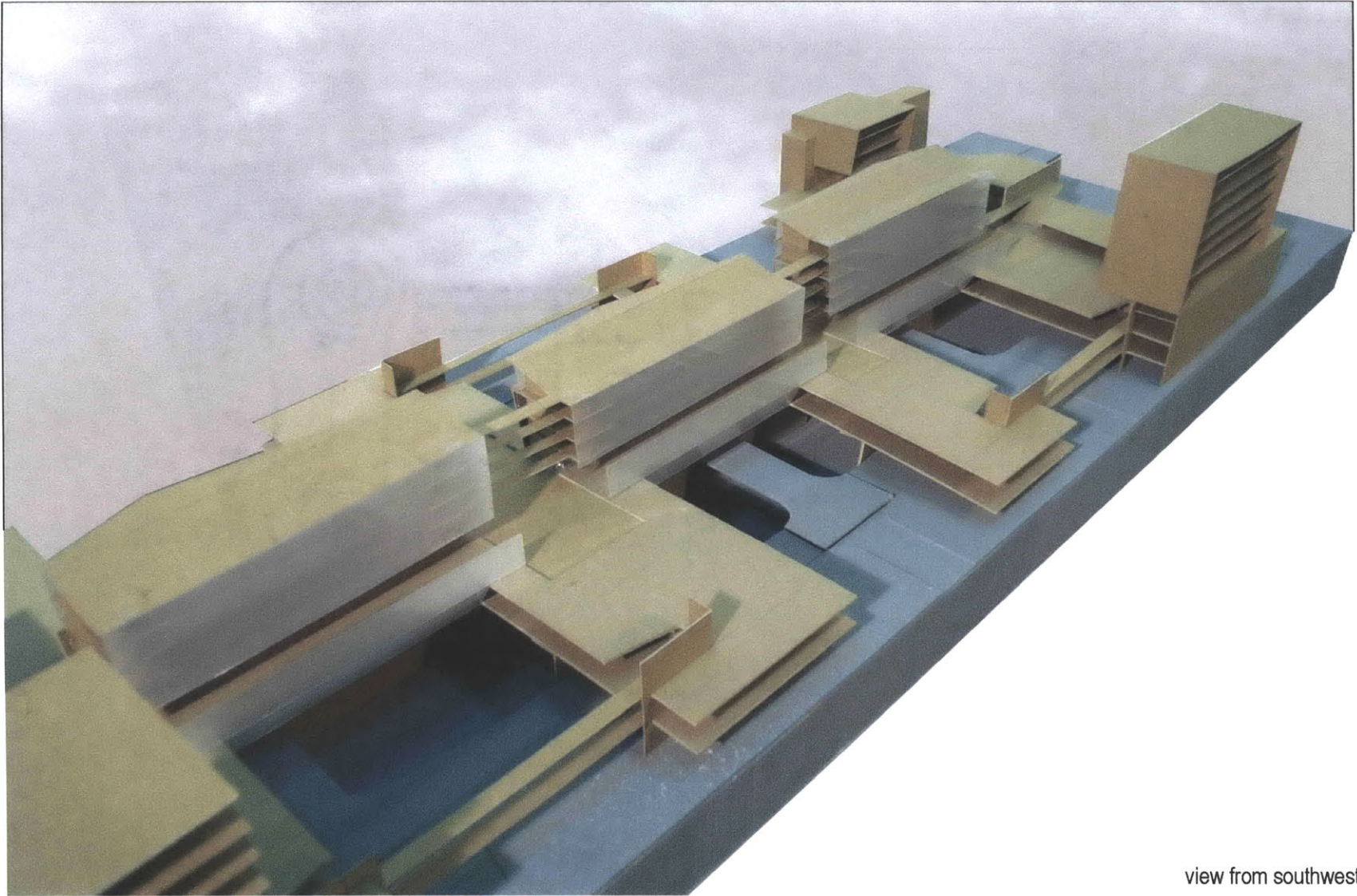
urban operations



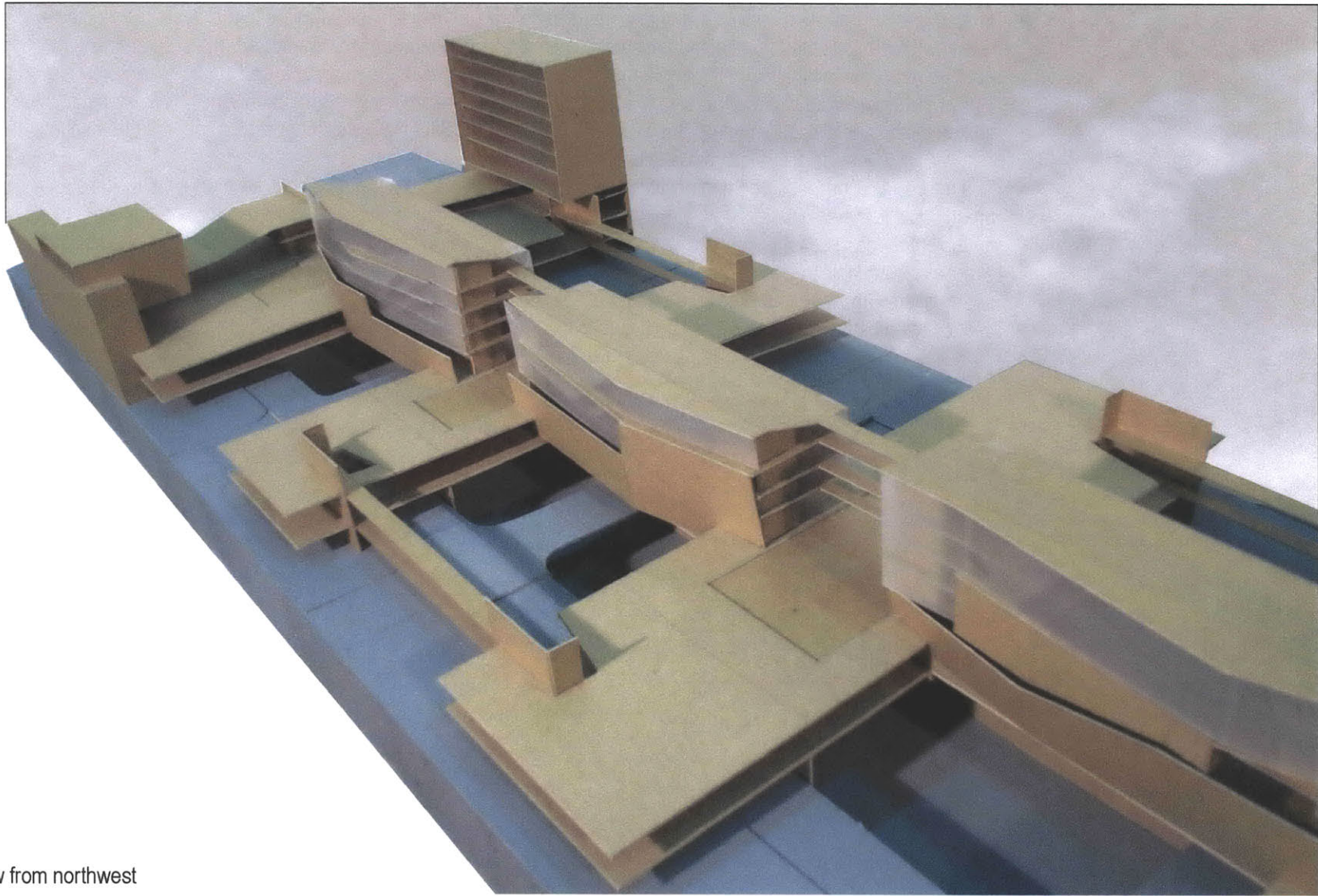


The architectural proposition focuses on the investigation of the highway-building above and parallel to the highway (the catalyst). The following study model was done in an effort to explore the spatial possibilities of this linear building creating connections with the bridge-buildings and responding to the directionality of the highway.





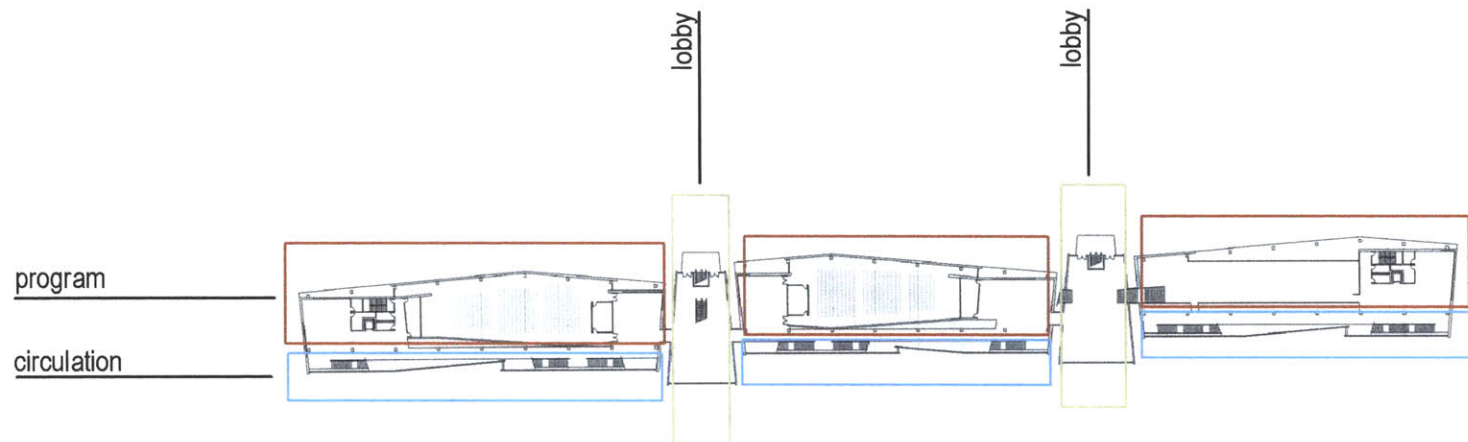
view from southwest

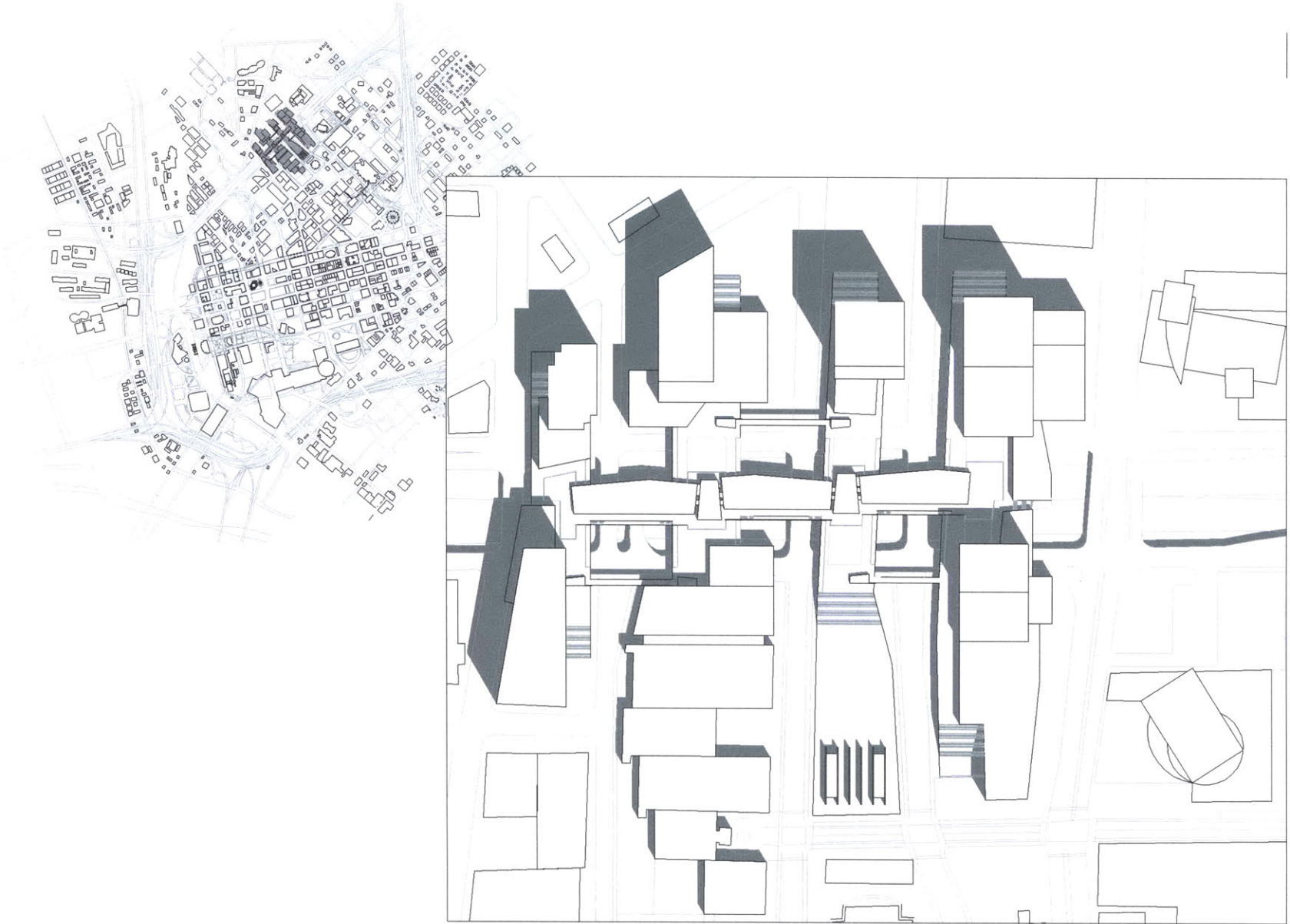


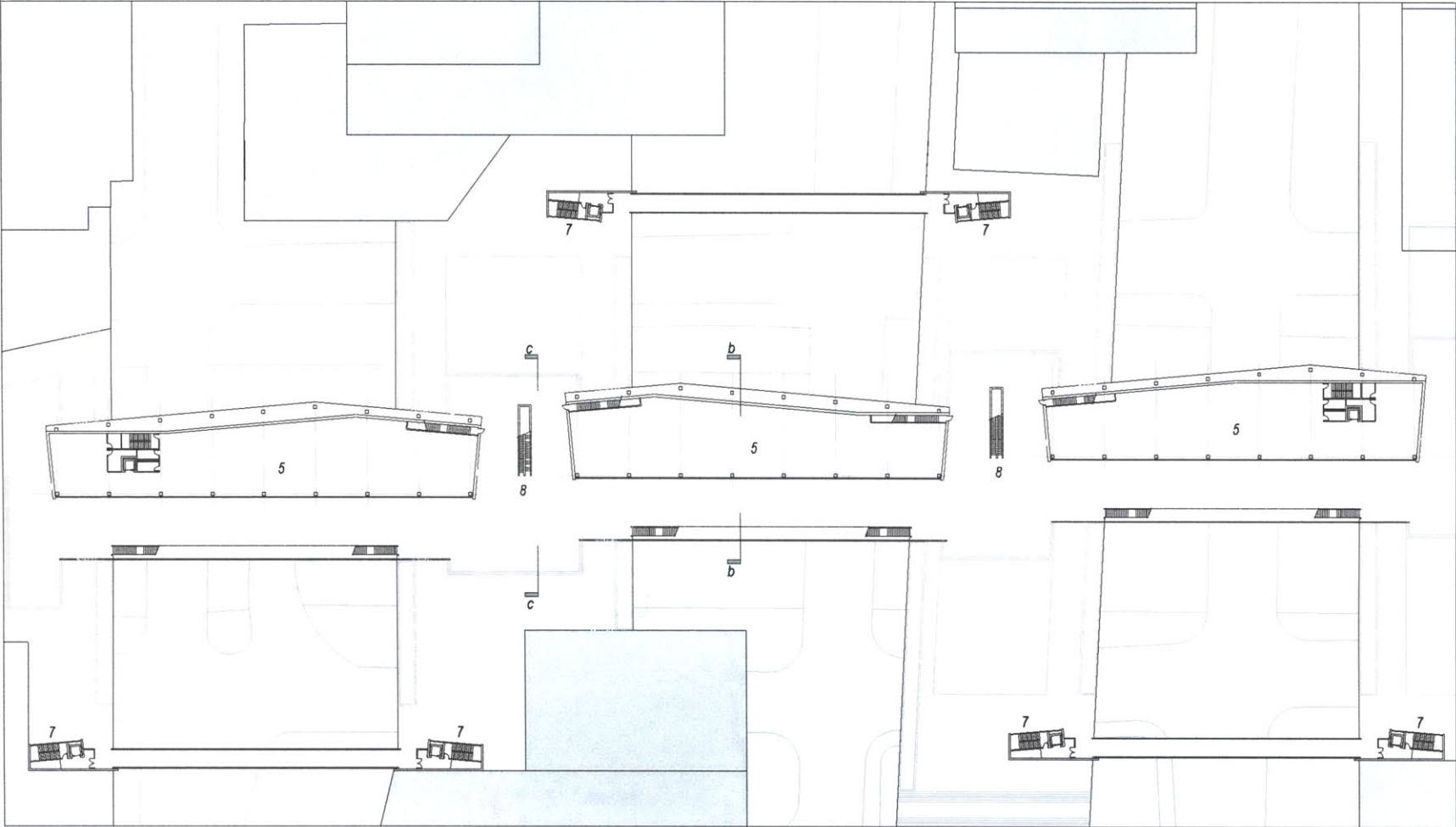
view from northwest

The programmatic composition of the highway-building produces three different segments each with a unique combination of the programs which include auditoria, exhibition spaces, classrooms, and retail. In each segment, the main circulation (both horizontal and vertical) is maintained at the southern edge. This produces a consistent experience throughout each segment and allows these public spaces to benefit from southern sun exposure as well as the complete panoramic view of downtown. In addition, keeping all of the circulation on the southern face allows the formal vocabulary of the stairs and walkways (as highlighted architectural events) to define the southern facade. Therefore, the programmatic functions of each segment are laminated on the northern edge and push the skin of the building in and out as necessary. The northern bias of the program functions allow for privacy and easy manipulation of the soft northern light. This distribution of circulation on the southern edge and program on the northern edge provides a consistency throughout the three segments.

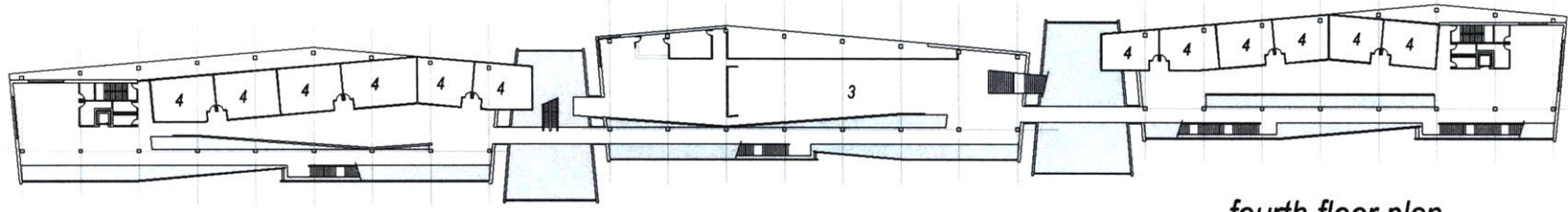
The intersection of these segments with the bridge-buildings (moving perpendicular to the highway) creates a unique urban plaza that also acts as primary entry points for the highway-buildings. These urban plazas act as orientation points for the entire urban scheme connecting the lobbies of the highway-building to the landscapes of the bridge-buildings. This event also highlights the retail function that occupies the pedestrian level of the highway-building. A continuous pedestrian street, lined with retail and entertainment functions, defines the physical connections to each bridge-building and also defines the most aggressive connection between the architectural experience and the highway itself.



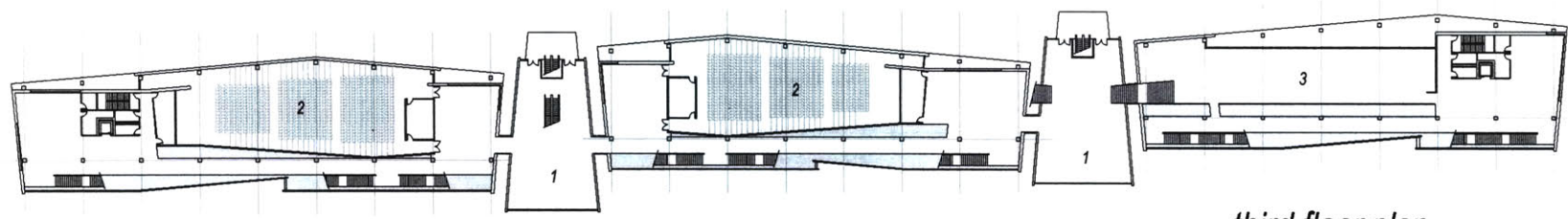




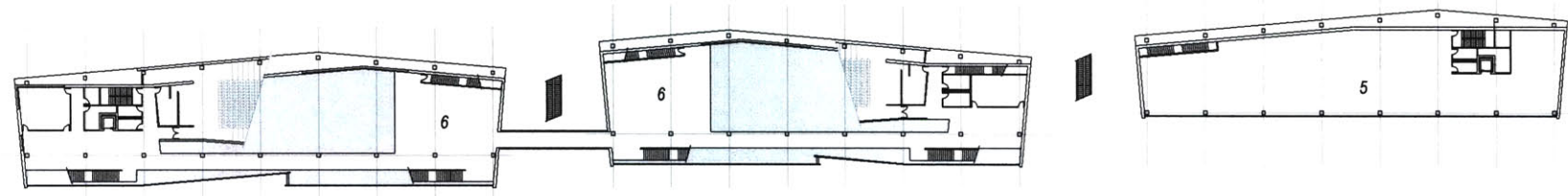
 *ground floor plan*
0' 25' 75' 175'



fourth floor plan

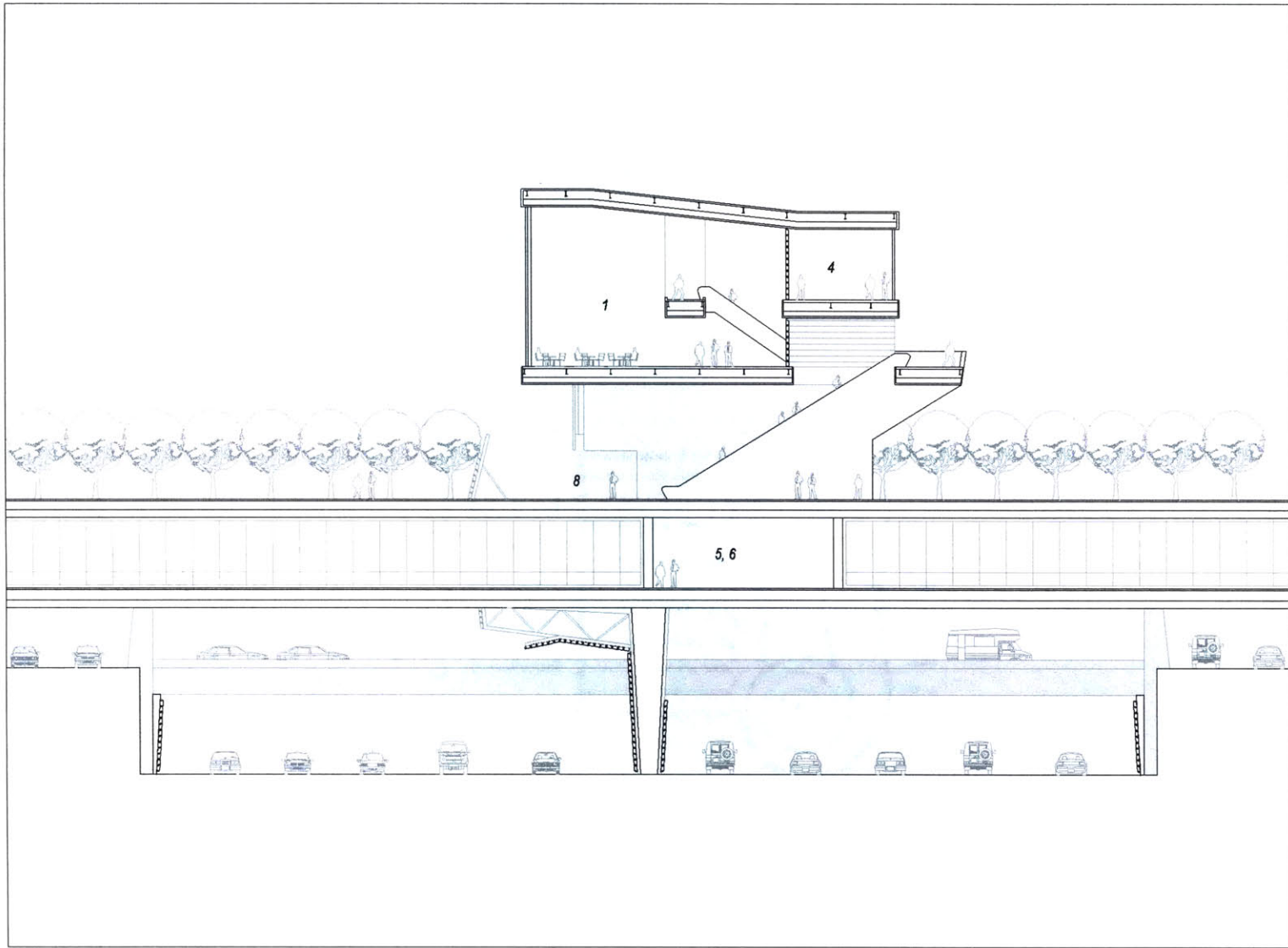


third floor plan

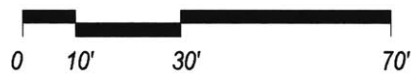


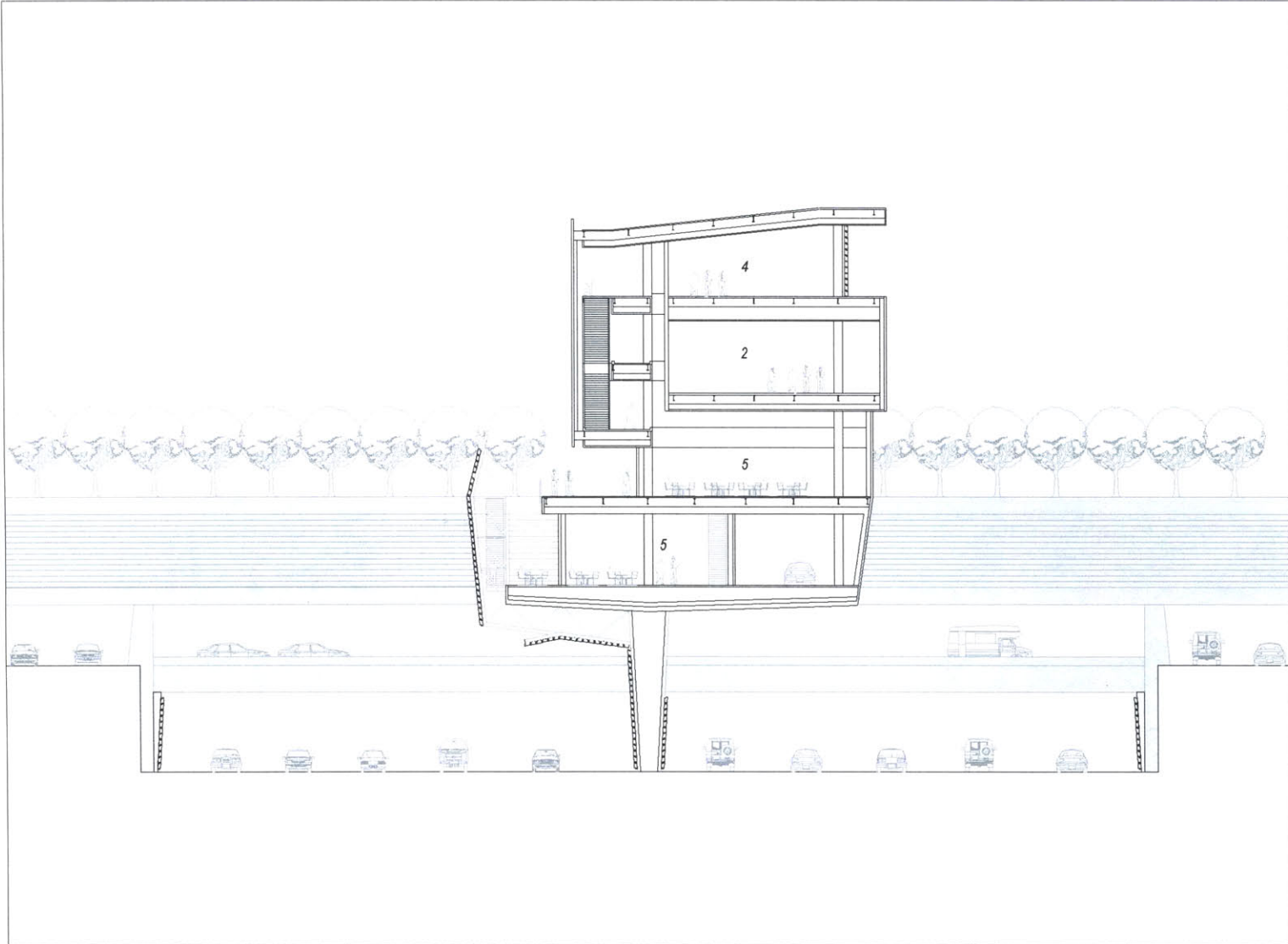
second floor plan



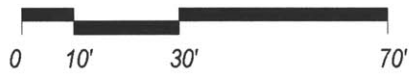


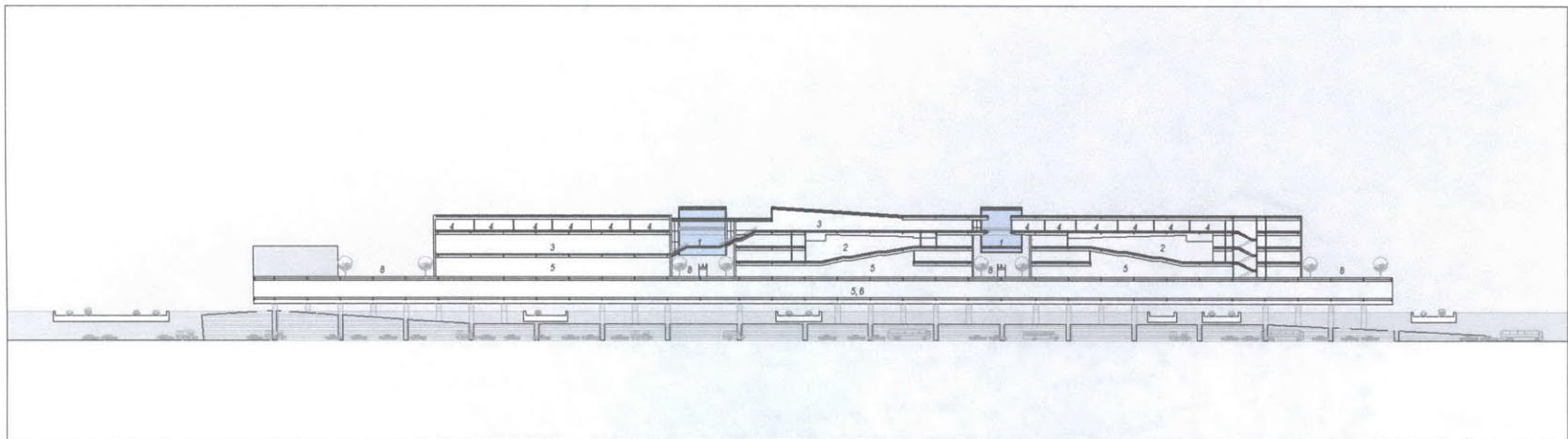
section c.c



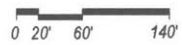


section b.b

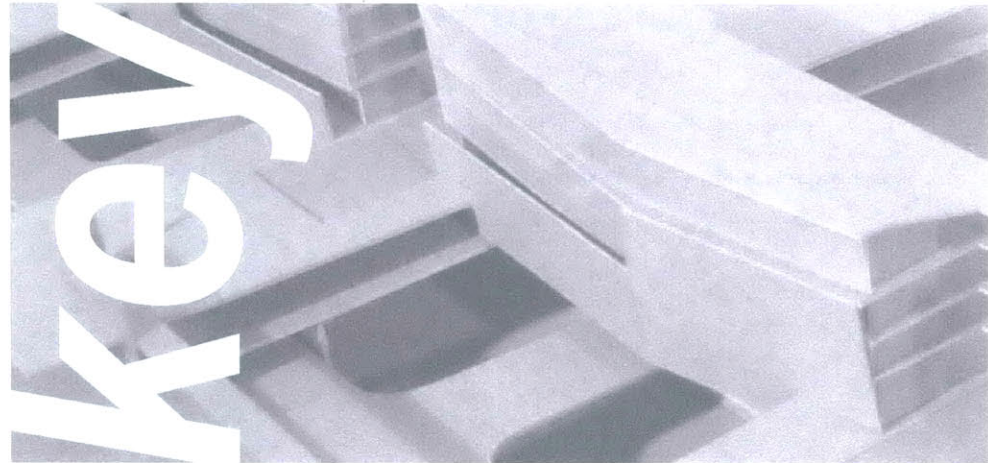


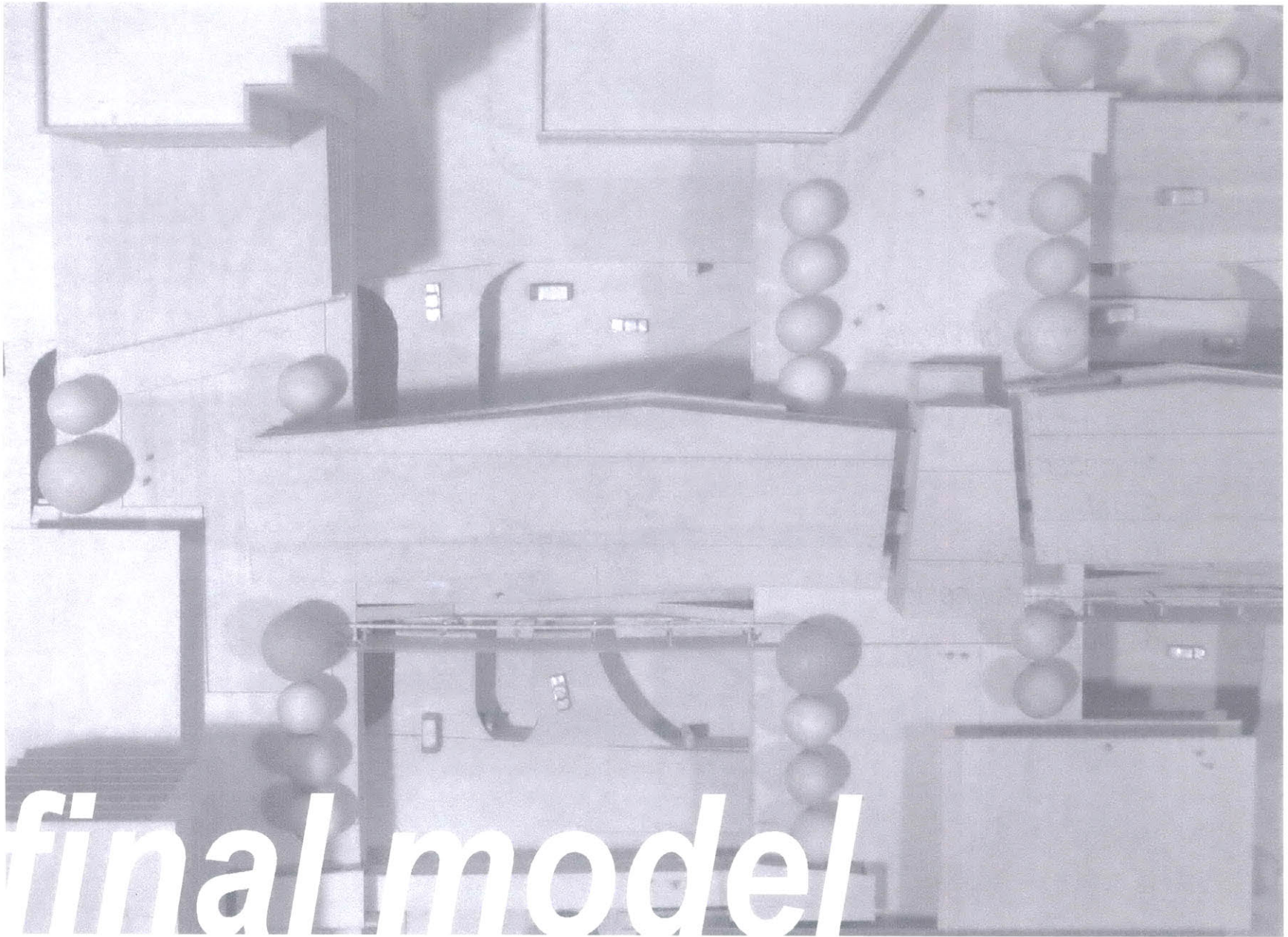


section a.a

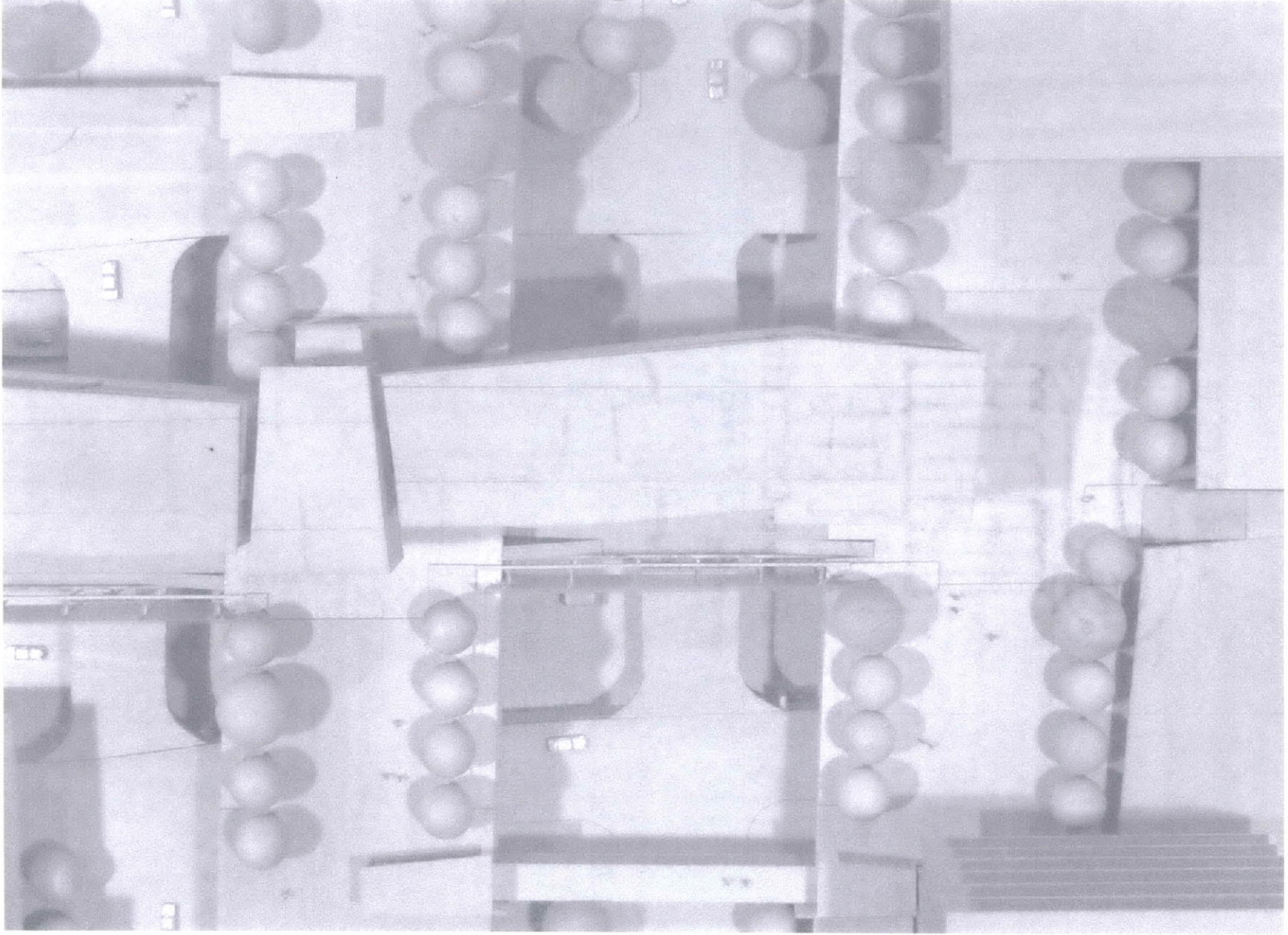


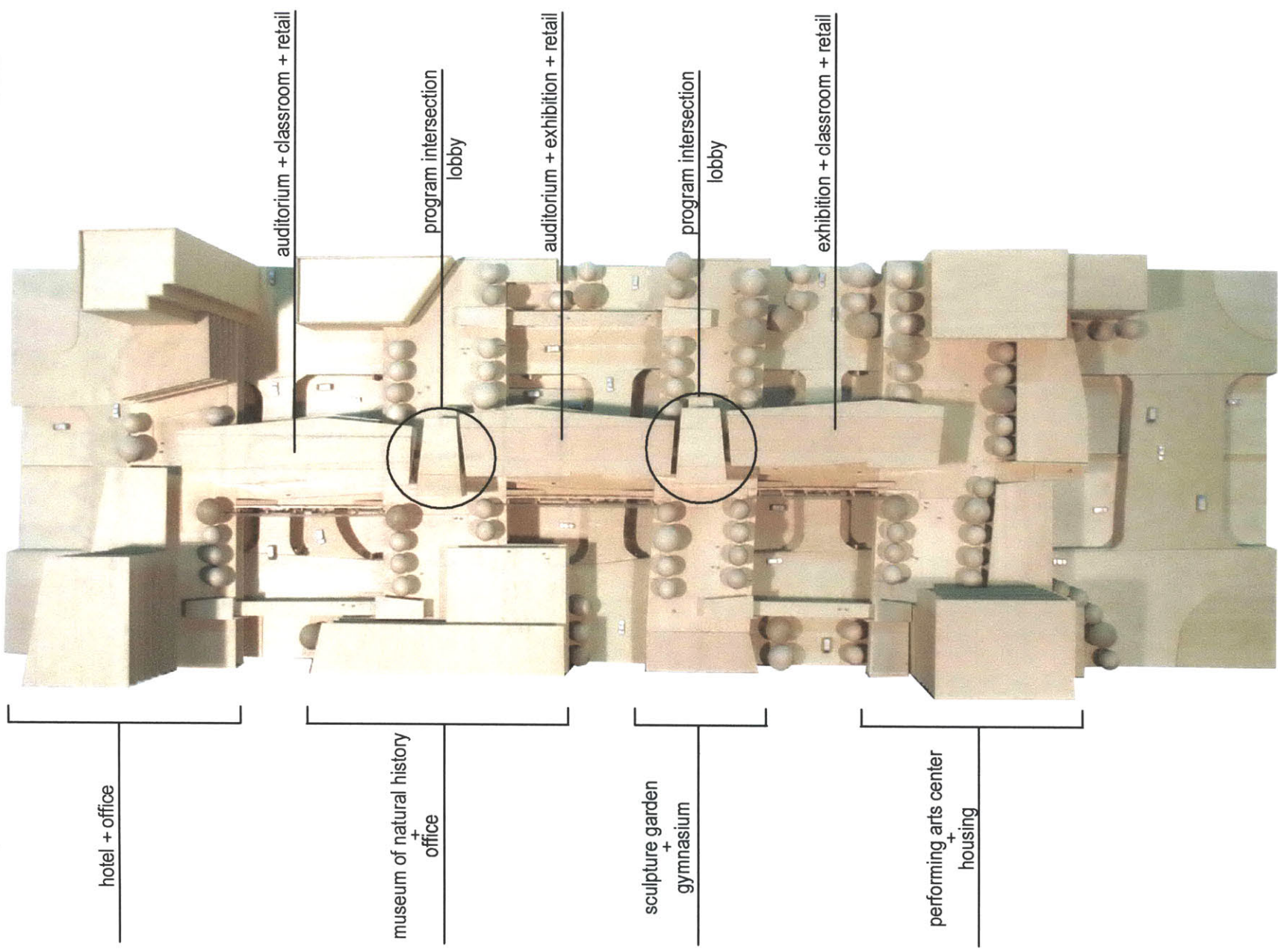
1. *lobby/ public node*
2. *auditorium*
3. *exhibition*
4. *classroom*
5. *retail*
6. *open office*
7. *vertical connectors*
8. *plaza*

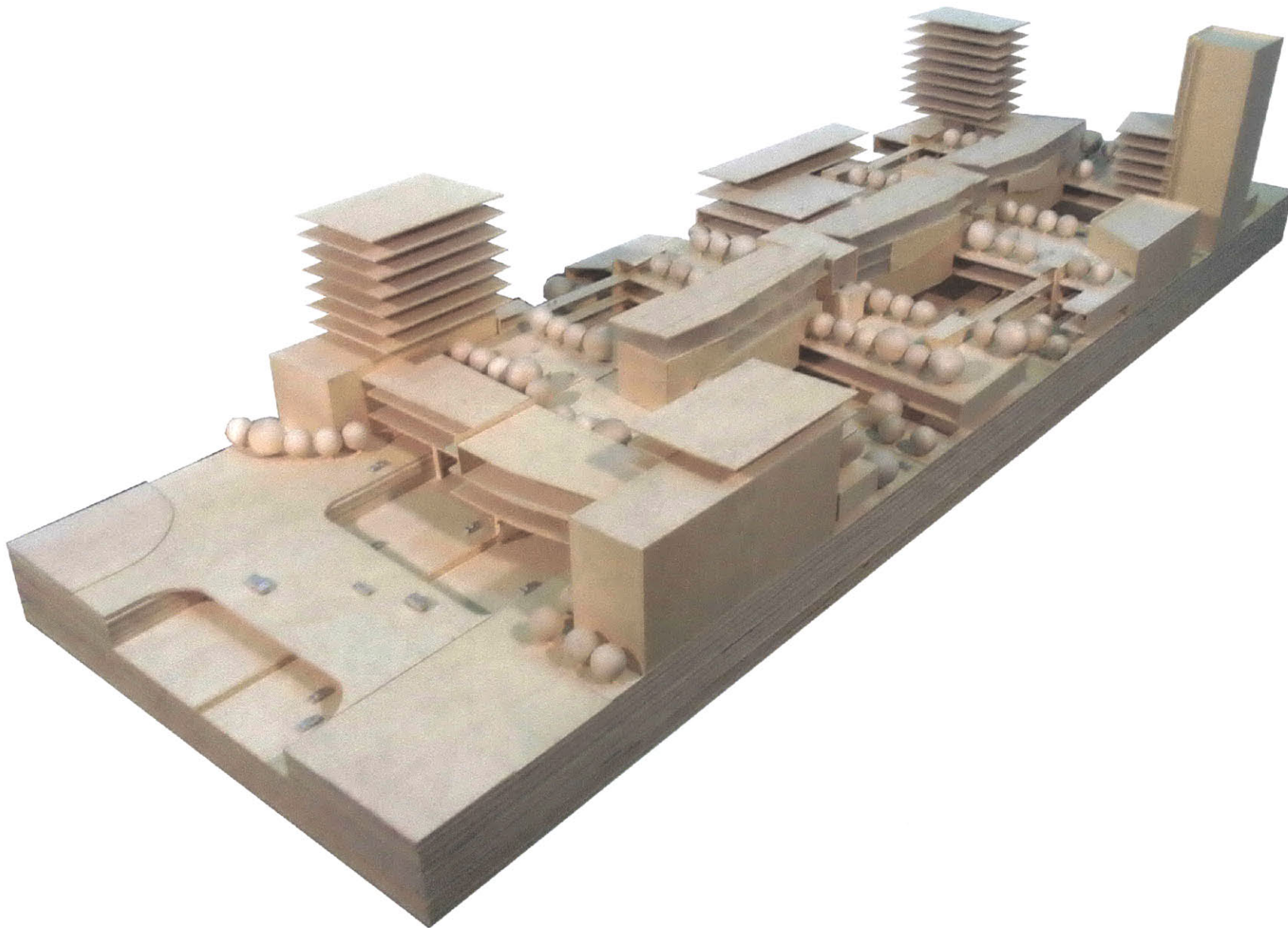




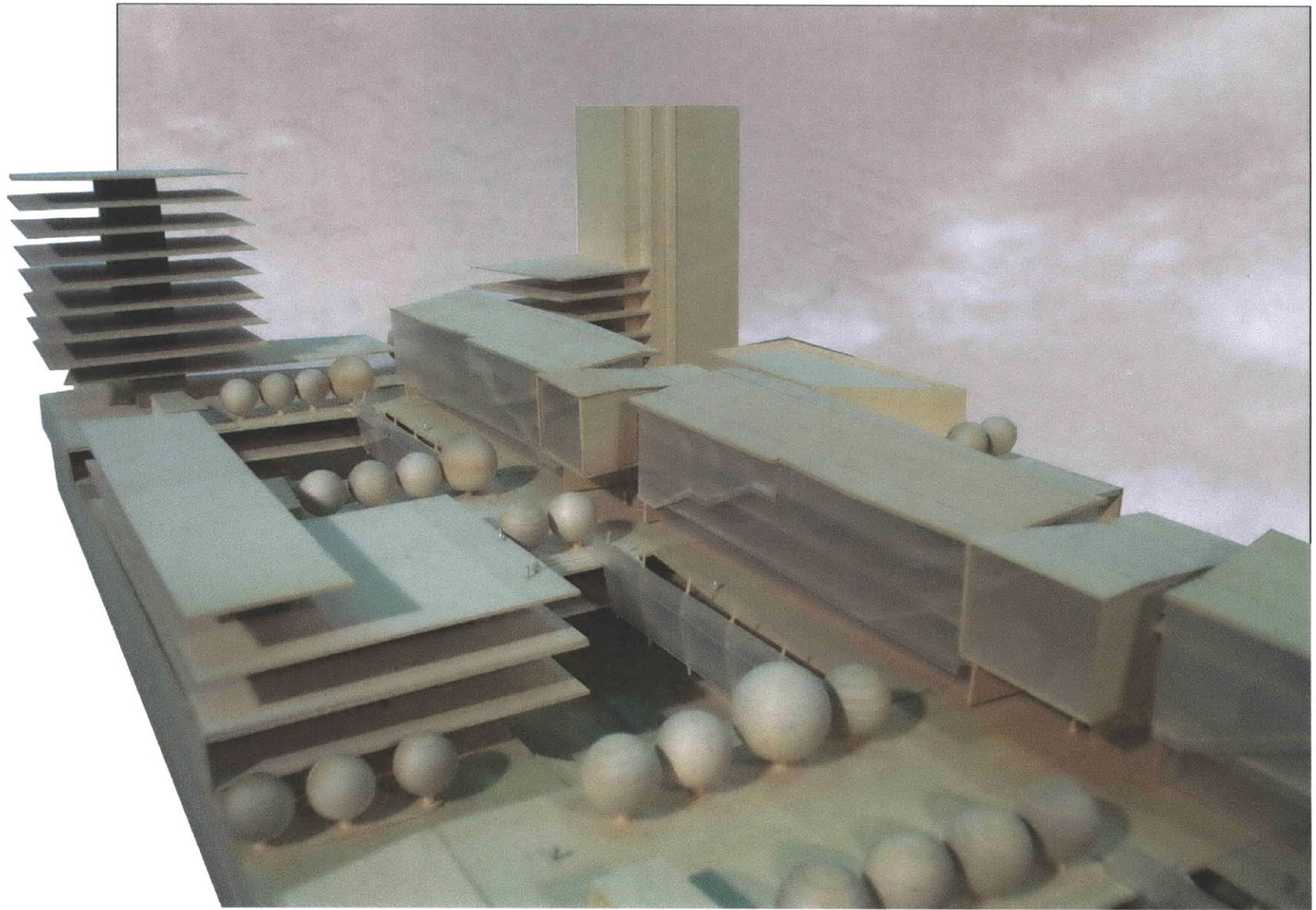
final model



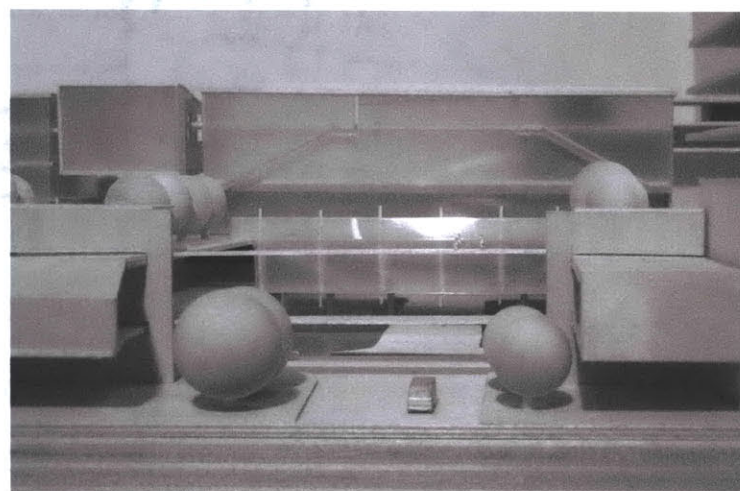
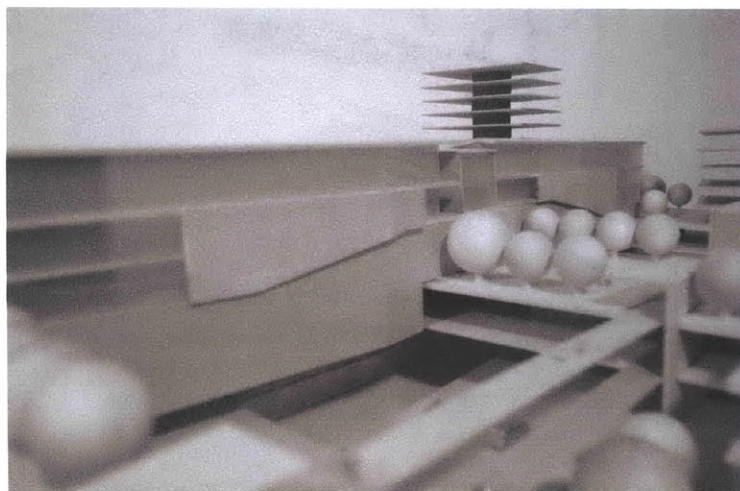
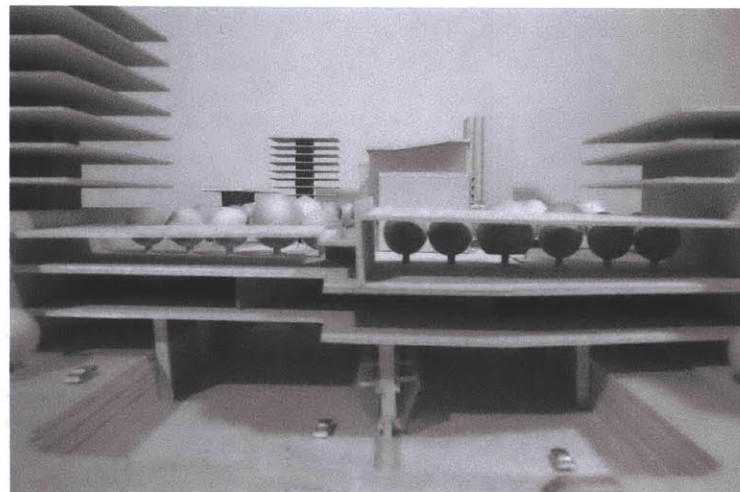
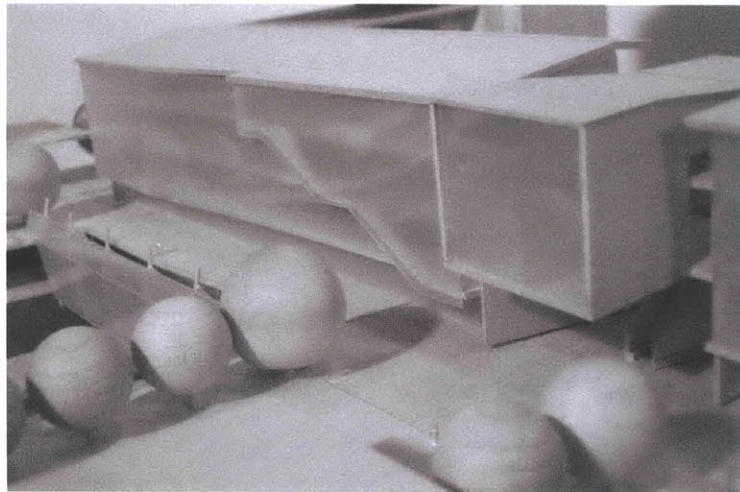


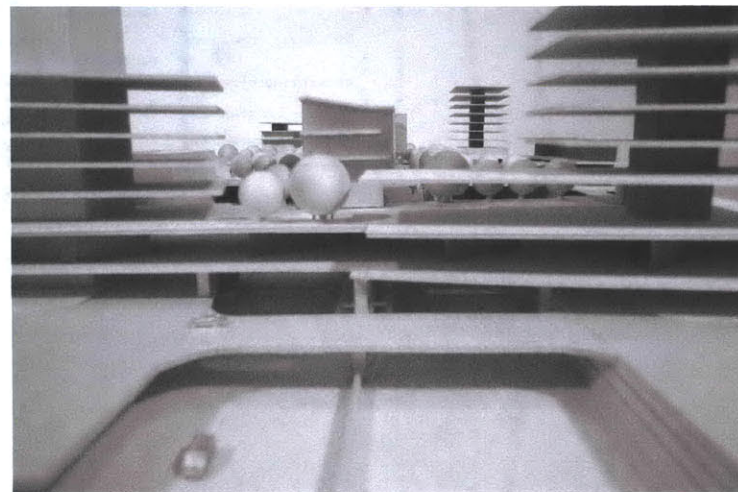
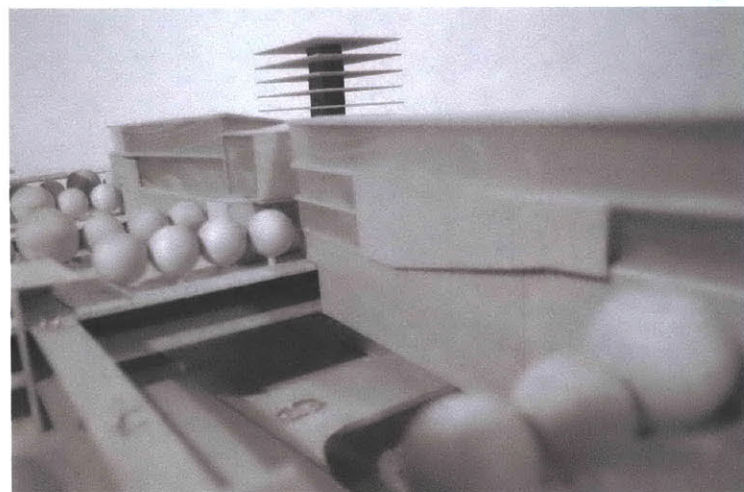
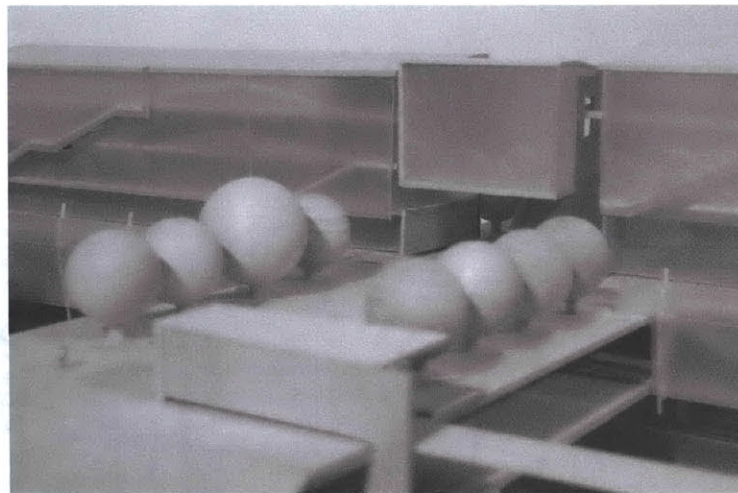
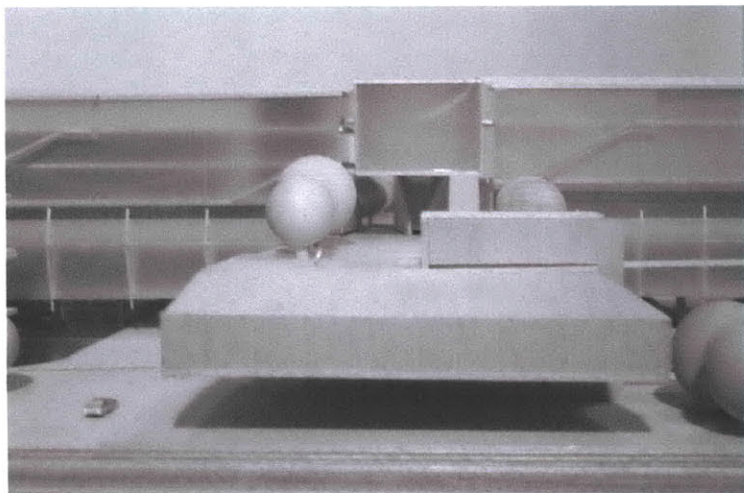


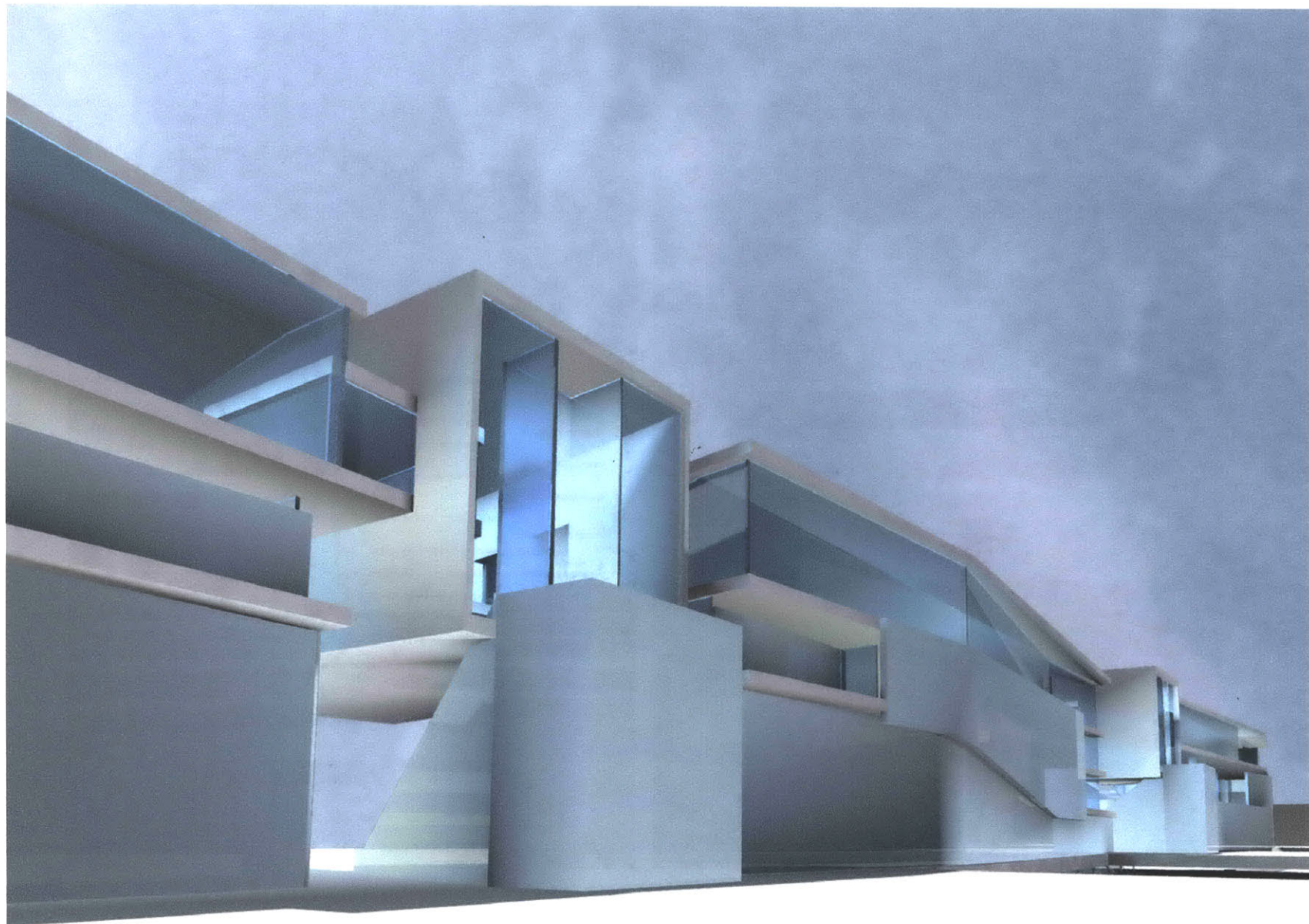
view from northeast

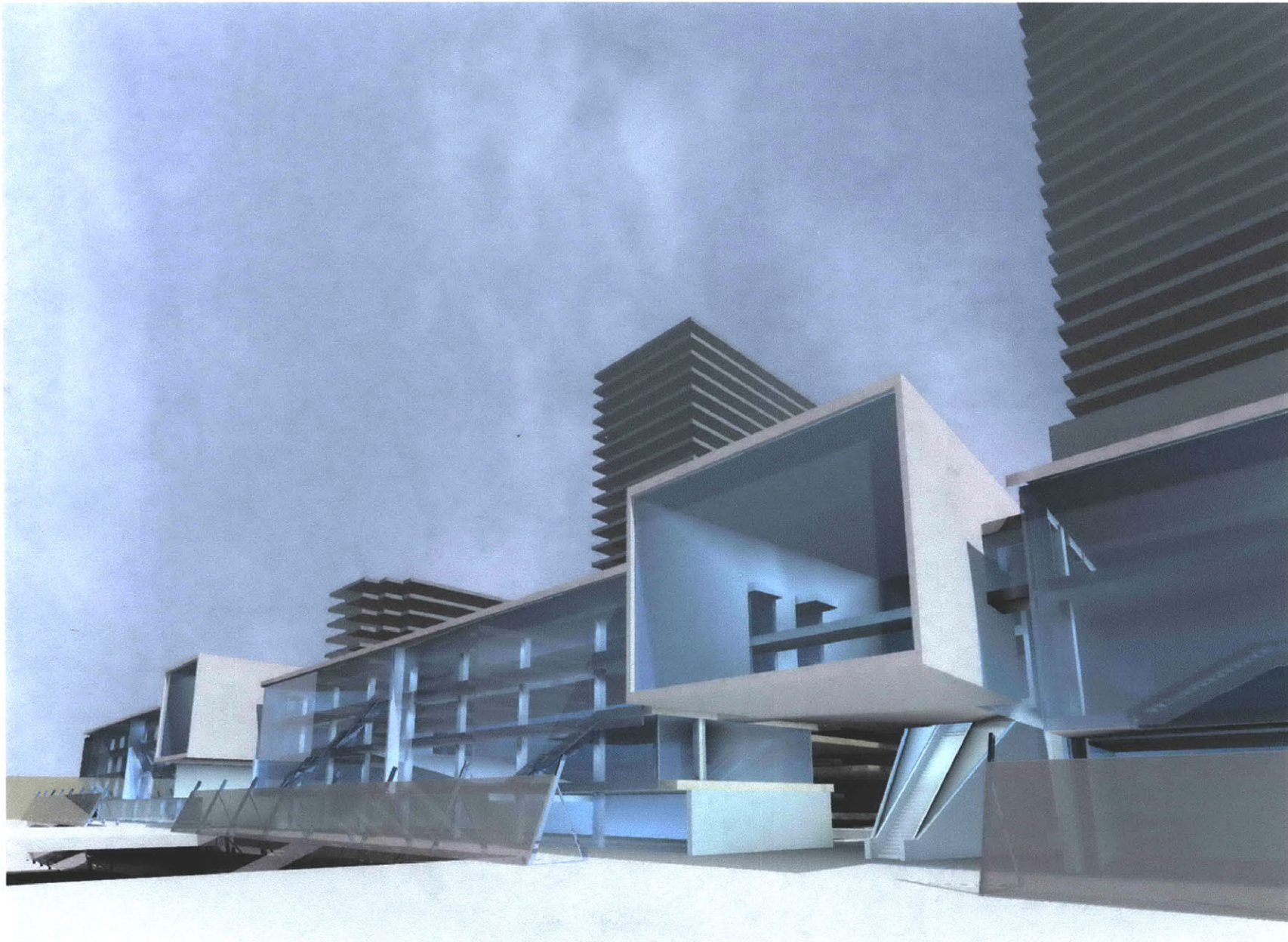


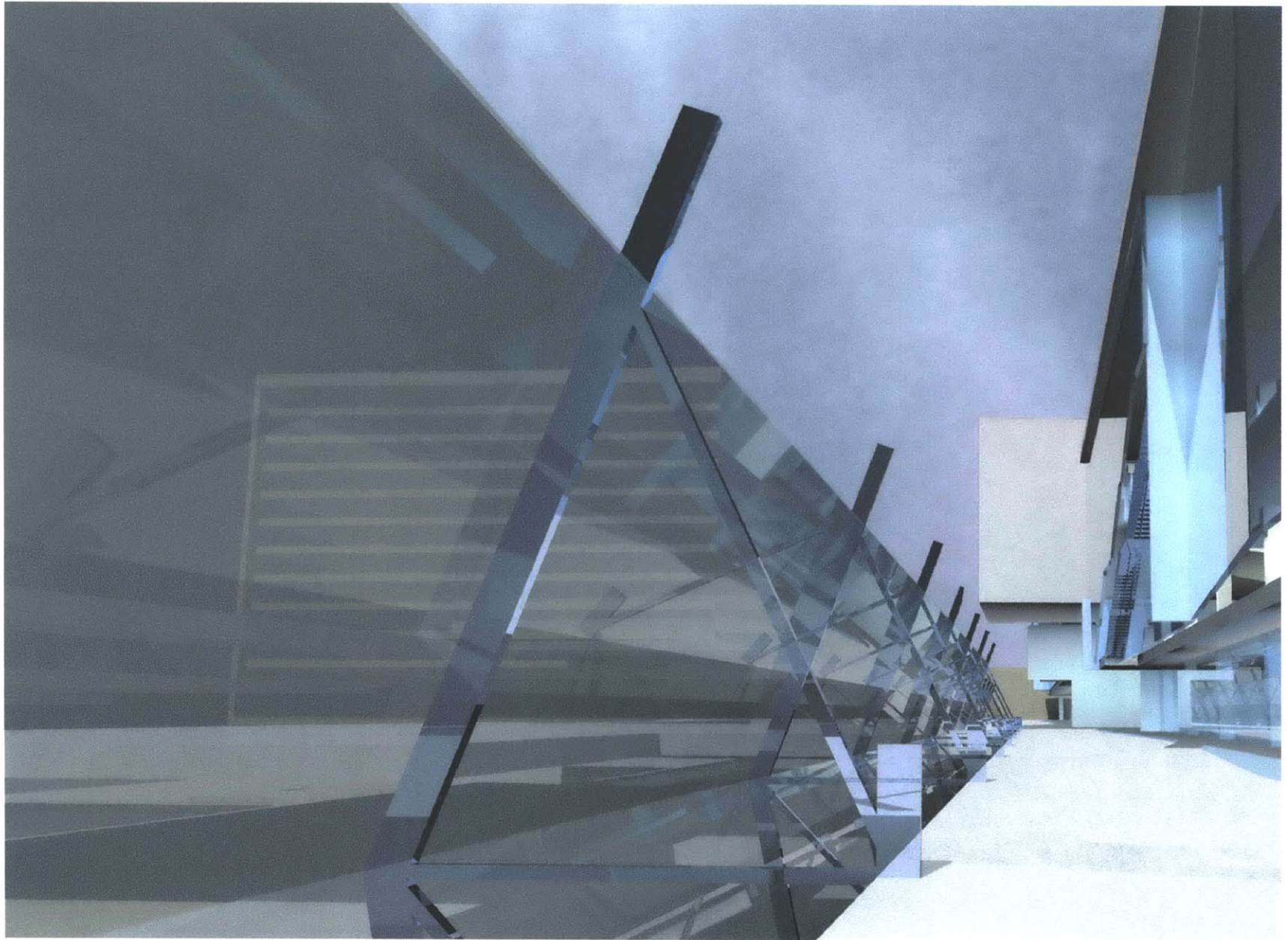










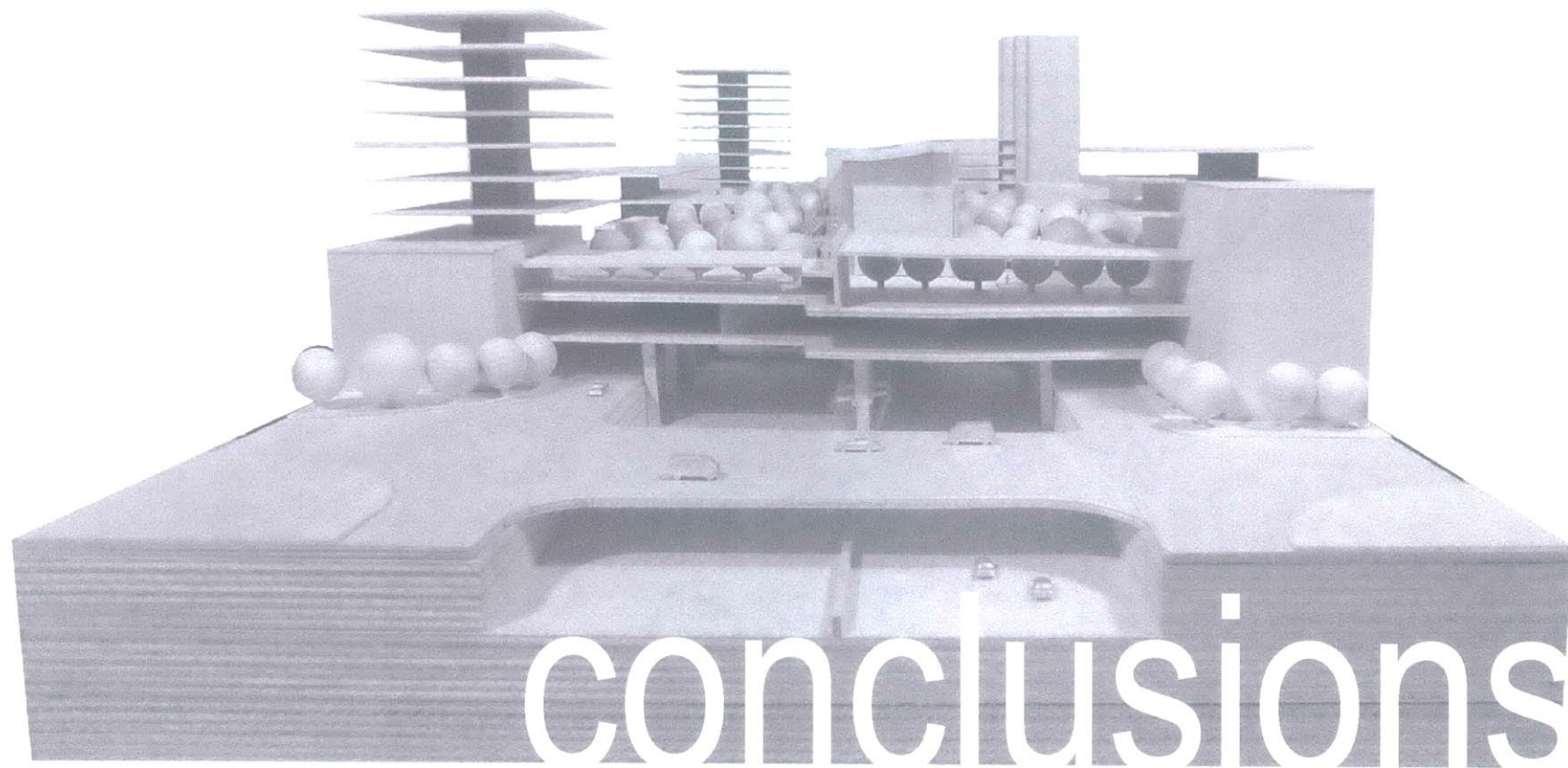


[conclusions]

The highway clearly plays a vital role in the growth and development of many of our cities today. New highways are constantly being planned and old ones seem perpetually under construction. They are instrumental in connecting cities and people, yet the debate over their negative effects versus their benefits continues. The highway, although inherently tied and integrated into the city, remains an autonomous structure creating severe divides in our cities. The attitude of many urban planners and many architects is to let it be and to build a safe distance away from it, but this attitude, and the zoning strategies that have followed, have created difficult left over spaces that have further diminished the urban pedestrian experience that once characterized downtowns. The intention of this thesis poses a different attitude towards this ubiquitous infrastructure, seeking to disrupt its autonomy and redefine its role in our cities.

The process of this thesis was to address this issue from an urban scale and an architectural scale, using the notion of hybridization as a vehicle for the design. The notion of hybridization questions the singularity of architectural typologies through the combination of disparate programs within one building and through the integration of architecture, infrastructure and landscape. This does not suggest the homogenization of architecture or of urban space. Rather, it generates its relevance through the differences of systems, differences in programs, and suggests that our understanding of the city and of architecture is not tied to the conventional relationship between building program and building identity. The city does not rely on archetypes just as a church does not rely on iconography. The hybridization of types allows for the exploration of spaces in between, that can generate new understandings of architecture and of the city.

The focus of this thesis investigated the reconciliation of two neighborhoods separated by a highway. While this condition exists in many cities, the end product of the design exploration of this thesis cannot be deployed anywhere. Rather, this thesis seeks a methodology in both the site specific considerations of Dallas as well as through the generic considerations of the highway. I believe that the highway can be integrated into the urban pedestrian experience by finding these types of opportune sites in opportune moments to penetrate it, absorb it, and formally and experientially integrate it. The highway can be seen not as an instrument that divides the city, but as an opportunity to discover new urban and architectural forms and spaces. I believe that through the notion of hybridization, we can reconsider what the highway can be, what landscape can be, and what architecture can be.





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| 1,2 | Fogelson, <i>Downtown</i> |
| 3 | Koolhaas, "The Generic City," 1994 in <i>S,M,L,XL</i> |
| 4,5 | Fenton, <i>Hybrid Buildings</i> |
| 6 | Dethier, "Past and Present of the Inhabited Bridge" |
| 7,8 | Andreotti, "Ludic Practices of the Situationist Urbanism" in <i>Lotus 108</i> |
| 9 | Menu, "Euralille: The Making of a New City Center" |
| 10 | Boddy, "Underground and Overhead: Building the Analogous City." |
| 11 | Data gathered from the Transportation Department from DFWinfo.com |
| 12 | Dillon, "Art and Architecture in Dallas" |

illustration credits

unless otherwise noted, all images are by the author

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| 1 | Vergara, "The Freeway and the Border" (p. 25) |
| 3-4 | from www.texasfreeway.com |
| 5,9 | image produced in a collaboration between the author and Nicole Michel |
| 8 | Fogelson, <i>Downtown</i> (p.266) |
| 10 | Kostof, <i>The City Assembled: Elements of Urban Form Throughout History</i> |
| 11 | Kilham, <i>Raymond Hood, Architect</i> (p.189) |
| 12 | Holl, <i>Pamphlet Architecture, no. 7</i> |
| 13 | Tschumi, <i>Lotus 108</i> (p.93) |
| 14-15 | Wigley, Constant's New Babylon: The Hyper-Architecture of Desire |
| 16-19 | Croisé (ed.), <i>Euralille. The Making of a New City Center</i> |
| 20 | Photograph acquired from Elkus Manfredi Architects |
| 22, 26-27 | Dillon, "Art and Architecture in Dallas" |
| 23, 25 | Pei, Cobb, Freed & Partners, <i>A+U</i> , no.11 |
| 24 | www.dallasplan.org |
| 28 | zoning plats from Dallas City Hall, Department of City Planning |

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acknowledgements

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