Revisiting Parking Structures

Celebrating an Automotive Culture in the Digital Era

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REVISITING PARKING STRUCTURES

by

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A Thesis

In

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Month, Year

to MOM and DAD
THANKS for the Legos, pencils, graph paper, encouragement, support...
for everything
further acknowledgements at back

PREFACE

The auto-industry has constantly adjusted the design and technology of the automobile to our needs. With 240 million cars on American roads in the year 2000 and a projected one billion cars on American roads in the year 2030[1], the issue of where we store our cars when we are not using them is more critical than ever before. Contradictory to the auto-industry's technological and typological progression, parking structures of today seem to recall a time when Henry Ford's Model-T was available "painted any color so long as it [was] black". Designers of parking structures could match the auto-industry's innovation by using our current digital culture as a lens through which to understand and design parking structures. This approach to contemporary architecture is similar to that of theorist Anthony Vidler's and could help designers to realize what parking today could be.

Anthony Vidler has written extensively on architectural typology and architecture in response to cultural context. A number of his most recent publications, including *Warped Space: Art, Architecture, and Anxiety in Modern Culture*, are concerned with the impact of the digital realm on architecture and architecture's response to a digitized society.

Parking structures are a unique building type and require in depth design considerations which they are not often given. Designed simply for the storage of automobiles, today's parking structures do not address the needs of contemporary drivers and the capabilities of modern automobiles instilled by the progressive automotive industry. The design profession needs to be equally progressive and provide new solutions that match the innovation found in contemporary automobiles.

Parking structures also have their share of pragmatic issues due to a lack of attention from the design profession. Safety can be greatly improved following simple design rules, as can the ease of use. Many current local ordinances are so centered on the aesthetics of parking structures that they do not functionally improve the urban environment. A literal imitation of a façade that belongs on a building of another type, perhaps even stylistically

from another era, is often encouraged. It is with this visual confusion, a lack of identity to their true type, and a lack of properly serving an automobile culture altogether, with which parking structures currently answer a perpetually progressing automotive culture in a digital era.

In order to resist the traditional response, the latent demand of drivers and passengers of automobiles must be understood. There exist only a small number of notable parking facilities on which to base precedence.[2] Publications on parking typically focus on fulfilling minimum functional standards and do not consider the quality of life within. Notable publications of *Crime Prevention Through Environmental Design* (CPTED) in parking structures have recently come to light, but their application in practice is still limited.[3] The digital society of the early 21st century offers an additional opportunity to reconsider parking structures through its lens.

GLOSSARY

The terminology related to parking facilities lacks consistency, therefore the terms used in this document are defined as follows:

Automobile Docks: outlets that allow each vehicle to be "plugged into" the facilities resources (may include power, audio/video connections, network cables, etc.)

Parking Bay: a double loaded corridor of parked automobiles with circulation space through the center

Parking Deck: one level of a multi-level parking garage or parking structure

Parking Garage: a parking deck or series of stacked parking decks enclosed within a building's envelope that requires mechanical ventilation

Parking Structure: an open air parking deck or series of stacked parking decks that does not require mechanical ventilation

Vehicular Docking Space: space where several vehicles can park and "plug in" to the facility's resources

Vehicular Storage Space: a general term used to describe the parking area provided for the storage of automobiles; encourages the idea of continuing to utilize the automobile while it is not in use as a mode of transportation

Notes

1. Jonathan Bell, *Carchitecture: When the Car and the City Collide* (Basel: Birkhauser, 2001), 11.
2. Anne Guiney, Various articles in *Architecture* (February 2001): 98-100.
3. Smith, Mary S. *Crime Prevention Through Environmental Design in Parking Facilities*. April 1996. Available from http://www.nacsonline.com, accessed 20 September 2003.
4. Anthony P. Chrest., Mary S. Smith, and Sam Bhuyan. *Parking Structures: Planning, Design, Construction, Maintenance, and Repair* (New York: Van Nostrand Reinhold, 1989), 2.
5. Ibid.

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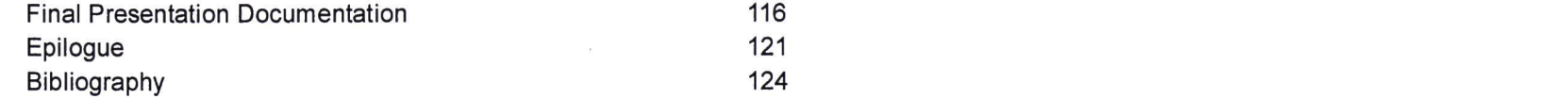

ILLUSTRATIONS

Note: All images, except those by author, are referenced in the image captions.

ABSTRACT

The automobile industry has constantly adjusted to our culture's needs over time, which contrasts with the design profession's attitude toward parking structures. In order to accommodate the capabilities of contemporary automobiles, the design profession must create a digitally-inspired parking structure type that responds directly to the needs of drivers in the digital age in which we live. This can be derived from Anthony Vidler's approach to architectural type in the digital realm.

Project Scope

This project will consist of a hybrid parking project located in the Downtown Dallas Central Business District. The facility will address the pragmatic concerns that accompany parking structures and the theoretical aspects of what a parking solution should address in our contemporary culture. This proposal will aim at creating a parking solution that is much more than a utilitarian storage space.

Context Statement

Dallas's Central Business District is in need of more centrally located daytime parking. A higher level of nighttime safety and security is also needed and can be accomplished by enhancing the nighttime street activity. The location for this project is at the corner of St. Paul and Live Oak Streets in the Central Business District of Downtown Dallas, Texas. What is currently several separately owned surface parking lots will become the site of a multilevel parking structure with multiple integrated uses.

Fig. 1. Tower Garage, Dallas, TX

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THEORY

THE MORPOHOLOGY OF ARCHITECTURAL TYPOLOGY

SUPPORTING THEORY

Introduction

Architectural typology has morphed throughout history in response to changing cultural characteristics and has accordingly adapted to our current cultural context. Just as architecture first used nature as justification, then responded to industrialism, and finally accommodated post-modernism, current architecture should be a product of digital culture. This computer-oriented and information driven culture is providing a vehicle from which to derive architectural form, and more specifically, interpret architectural type. The architectural product of this culture is characterized by its own unique forms and aesthetics, and more importantly, a spatial perception found only within the limits of a digital media. This kind of architecture contributes a new lens through which to view architectural type.

Anthony Vidler's *Third Typology* clarifies the difference between post-modern architectural type and its precedents. Vidler weaves his thoughts with those of Aldo Rossi, seen in their fullest in Rossi's *Architecture of the City*. In the time since the publication of *The Third Typology*, architectural typology has adapted to current cultural ideals. This can be further understood with a look at Anthony Vidler's latest publications, including *Warped Space*. Today's architectural forms are a product of the digital realm in which we live and which provides the current lens through which to interpret architectural type.

Type and Typology Defined

The difference between the terms *type* and *typology* are instrumental here. Aldo Rossi defined typology in *The Architecture of the City* as "The study of types of elements that cannot be further reduced, elements of a city as well as of an architecture." Accepting this definition, typology as "the study of types," is therefore the vehicle through which to evaluate architectural type.

According to Anthony Vidler, type is "the form that enabled it (the building) to be read as to its purpose at first glance."[1] Type therefore has to be something that buildings of the same purpose have in common, and in accordance with this, Raphael Moneo defines type as "a concept which describes a group of objects characterized by the same formal structure."[2]

Antoine Chrysostome Quatremere de Quincy, an early architectural theorist credited with the first written definition of "type," held that a type was not a model meant to be copied between buildings of the same function, rather a metaphorical signal that identified each building yet set buildings of the same purpose apart. Based in the Enlightenment, Quatremere de Quincy utilized nature as the vehicle for understanding and explaining architecture, showing the metaphorical connection of natural forms to those of the ancient Greeks.[3]

Summary of *The Third Typology*

In *The Third Typology* Vidler divides "the production of architecture" from the mid-eighteenth century to 1977 into three typologies. The first, he claims, is summarized as a product of man's basic need for shelter and is characterized by its imitation of nature and its fundamentals. It is basically an extension of nature itself, where nature is used as the medium for understanding architecture. Vidler quotes M.A. Laugier and refers to his primitive hut in support for this, noting that this constitutes the principles of the "first typology." Vidler does not, however, refer to Quatremere de Quincy's early similar views at any point in his discussion of typology. One has to look to Vidler's earlier publication, *The Idea of the Type: The Transformation of the Academic Ideal*, which contains a discussion of typology in terms of Quatremere de Quincy.[4]

The second type is an answer to the machine age, heavily related to the Modern movement. Vidler makes the assertion that architecture is, at this point, "equivalent to the range of mass-production objects."[5] Vidler quotes Le Corbusier as an introduction to his explanation of the "second typology" where Le Corbusier speaks of standardizing dimensions in design on the basis of man's physical dimensions and his unique form.

The third type, more urban in scale and less concerned with the individual building form, is retaliation to the "fragmentation" created by the types of the "recent past" (as of 1977). For the first time, the city is considered a continuous realm of intricately arranged fragments which do not repeat the past or "re-invent institutional type-forms." These fragments are made up of either the implied meaning of previously existing forms, the fragments themselves, or a newly assembled composition of the previous types.[6]

Vidler holds that the need to define architecture by anything more than its form is relieved, i.e.—the function is relieved of its role as the primary determinant in design. Aldo Rossi uses the example of the Palazzo della Ragione in Padua, Italy to support a similar view. This building, beginning as a palace, has long-since changed functions several times, rendering the function of the building "entirely independent of the form."[7] Preceding this point, Vidler refers to the previous typologies as "elemental, institutional, and mechanistic," thereby alluding to their strictly functional nature.[8]

Vidler's "Third Typology" and Aldo Rossi

Accompanying Post-Modernism, Vidler's "third typology" "acts in opposition to the modern movement."[9] Justification for architecture is now found within architecture itself, rather than derived from the external forces of either nature or industrialization.

Vidler proposes that this typology views architecture through the lens of the city which becomes a conglomeration of fragments constituting the past typologies.[10] This new typology, in a sense, returned the idea of the type to Quatremere de Quincy's earlier discussion, i.e.—Vidler refers to Quatremere as "resisting a mechanistic theory of type which ultimately resulted in the consumption of architecture itself within the process of production."[11] This statement both describes the impact of the modern movement on architecture, thus resulting in Vidler's "second typology," and summarizes the objective of the "third typology."

Vidler speaks of the continuous form of the city generated from "fragments" and proclaims the "heroes" of this typology:

as those who, as the professional servants of urban life, have directed their design skills to solving the questions of avenue, arcade, street and square, park and house, institution and equipment in a continuous typology of elements that together coheres with past fabric and present intervention to make one comprehensible experience of the city.[12]

The New Rationalists, in Vidler's eyes, form the group of "heroes," as he speaks of their work and most notably the architecture of Aldo Rossi.

More currently, these goals associated with the "third typology" are related to some characteristics of the New Urbanism movement. This movement stems from a retaliation of post-World War II standard suburban tract housing and finds its momentum in townscape techniques long since past. By improving the quality of the built environment and providing a continuous connection between locations with high activity, the built environment is engaged. The overall goal of this movement "is to avoid the excessive separation of functions of modern urbanism along with the social and environmental harm that accompanies it."[13]

Form as a defining element of the type has its place at the scale of the city in both Vidler's writing and Rossi's work. It is most befitting that, as a composition of the typological elements of the past, Vidler's "third typology" is based entirely on form. Function could not prevail in this case; it was the combination of different buildings with different functions, all independent of their form, which made up the city, or the source of the "third typology." Rossi's view of the city is structured similarly with the composition of "urban artifacts" resulting in a form that he, in accordance with Vidler, stresses as continuous.

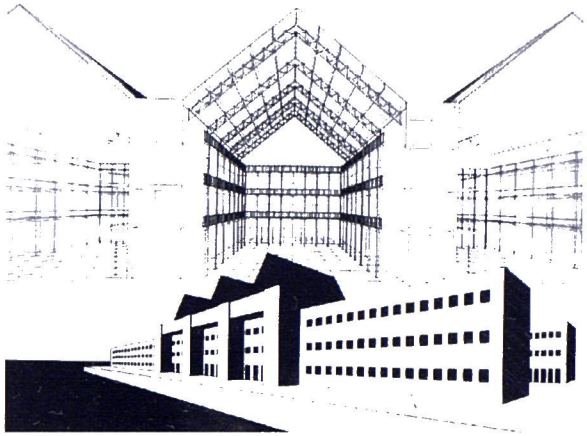


Fig. 2. Aldo Rossi, 1974 City Hall Project for Trieste, Italy (Rossi 1979)

Fig. 3. Kaplan McLaughlin Diaz Architects/Planners, Two Rodeo Drive, Beverly Hills, CA (Ellin 1996, 103)

Contemporary Architectural Form

> By the end of the nineteenth century, the impact of the industrial revolution was widely felt in architecture and urbanism. Newly harnessed forms of power and energy distribution were quickly dispersing and dissolving the pre-nineteenth-century city while new manufacturing and assembly processes were transforming the structural logic, appearance and materiality of the most common building forms.[14]

A new type of vertical living was introduced with the mechanical elevator brought about by Otis and first applied by Sullivan. Similarly, with the introduction of the car came a sort of horizontal living that had not yet been experienced. A system of roads allowed companies and families to function nationally. Through architects such as Frank Lloyd Wright, Le Corbusier, and Mies van der Rohe, the twentieth century learned to architecturally apply these advances in technology.[15] This idea is synchronous with Vidler's naming of a "second typology." Architecture responded to the machine age and modern architecture was born. In the case of Le Corbusier, the house became "a machine for living in."[16] Architecture was now seen through the eyes of industrialism.

> At the close of our century (the twentieth century), it is the information revolution that is metamorphosing architecture and urban design. Digital technologies are transforming the nature and intent of architectural thinking and creativity, blurring the relationships between matter and data, between the real and the virtual and between the organic and the inorganic and leading us into an unstable territory from which rich, innovative forms are emerging.[17]

Architecture is finally freeing itself from the static forms of an earlier time and beginning to flow in a manner that could be described as somewhat liquid, lending its form to current technology in constant motion. Counteracting all of this is the building occupant, as he or she can remain static and fixed to a workstation from which any activity in a day can take place.[18] Perhaps this explains the "performance in depth, activated architecture that can truly be called filmic,"[19] in Tschumi's Alfred Lerner Hall that, in reality, is made up of only people flowing into or out of the building rather than commuting between different spaces. While this makes the architecture no less "filmic," there is a certain irony to the intricate and expansive system of ramps: stairs exist that provide an alternate vertical route through the space if one has the energy and wishes to avoid the repetitive ramp system—and most people choose to do so in favor of time.[20]

Fig. 4. Bernard Tschumi, Alfred Lerner Hall, Columbia University, New York, NY, 1996-1999
(a) exterior view, (b) interior view
(*Architectural Record* 11/99, 94-101).

Current technology is not only affecting architectural form, but urban form as well. Much like the elevator and telephone contributed so greatly to vertical urbanism, today's digital technologies are to blame for the sprawling suburbs where lie the capabilities to virtually commute to work, shop for, or sell anything.[21] This technology has become the lens through which both architecture and urbanism is viewed.

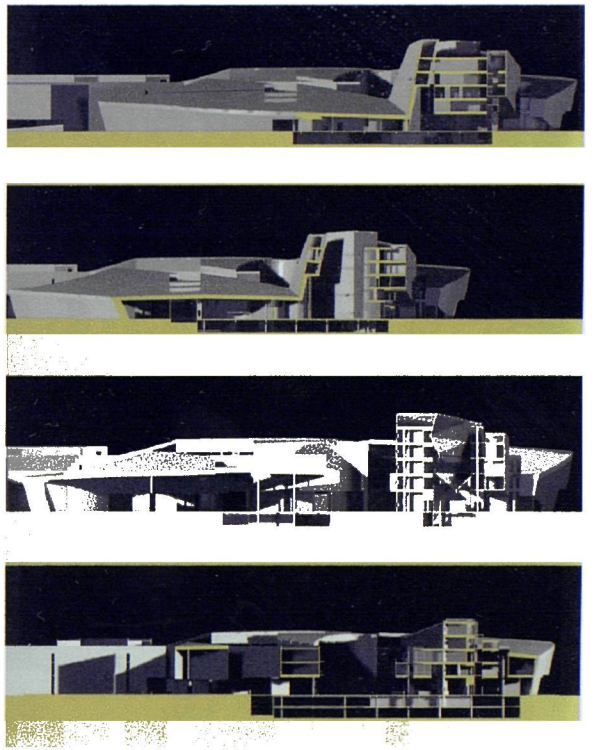


Fig. 5. Thom Mayne, Kartner Landes-und Hypothekenbank, Klagenfurt, Austria, 1996-1998 (Zellner 1999, 39)

The Digital Design Process

Computers are revolutionizing the design process in that they are overcoming the need for two-dimensional drawings for the purposes of understanding a building. For the architectural practice Morphosis, the "digital medium" has become their sole means of experimentation within the design process. They are able to work with a building as a whole rather than several parts represented only by their corresponding drawings. The possibilities with a digital model far outweigh those with a real model—"the manipulating, rescaling, stretching, amending, subtracting and prying" would not be completely possible with a real model. Typically, a final physical model follows the complete development of the digital model.[22]

A New Architectural Language

Compare a colossal nineteenth century wall to a wall by today's standards.

> By its inertia, the masonry wall must submit to changes in the external environmental situation. It is characterized by heaviness, opacity, permanence. In contrast, an innovative wall can activate sensors and thereby react to changes in the external situation by producing mutations. It is light, flexible, and fragile. The masonry mass acts like a barrier to information: it blocks out everything that tries to pass through it. On the other hand, the sensitive wall resembles a transmitter: it communicates in order to activate appropriate strategies.[23]

Elaborating on the same comparison above, consider the entire 19th century building as compared to a building by today's digitized standards. The difference here is that the earlier building totally shuts out its environment, while the current example lives off of interaction with its environment, much like a "skin" or "nervous system."[24]

Many architects today seem to have a fascination with combining completely organic and "experimental forms," thereby creating or contributing to the "blockbuster status" of some of today's buildings. Occasionally current architecture reflects the popular world of digital entertainment in that some of the same software that is used in producing films and video games is being used in designing buildings. Vidler holds that the relation between film and architecture "must be theoretical and critical rather than imagistic." Buildings will then take on qualities of "three-dimensional films."[25]

In a recent publication Vidler states, "I think that there is a reason to believe that the digital revolution is forging a truly new kind of architecture..." He follows this by mentioning an "already recognizable computer style...characterized by smooth, digitally rendered surfaces, complex curvilinear forms, bloblike objects, shells and skins stretched over wire-frame structures." Vidler furthers his concern and criticism to include the introduction of "an entirely new modernism," which pays no attention to "traditional conventions of style or aesthetics," that is a product of experimentation and movement.[26]

Maria Palumbo synchronously states:

> Leaving aside an interest in the [design] technique itself, what must be emphasized is that the changing essence of the contemporary body, which is in perennial transition, corresponds to an architecture that increasingly tends to move away from the world of *objects* and draw closer to that of *flows*, movements, connections.
>
> The computer countered the objective, mathematical, and measuring approach of perspective by its capacity to look at chaos and discover the new patterns of *order* characterized by their open and dynamic nature, sensitive to the surrounding world and influenced by them in unforeseen ways.[27]

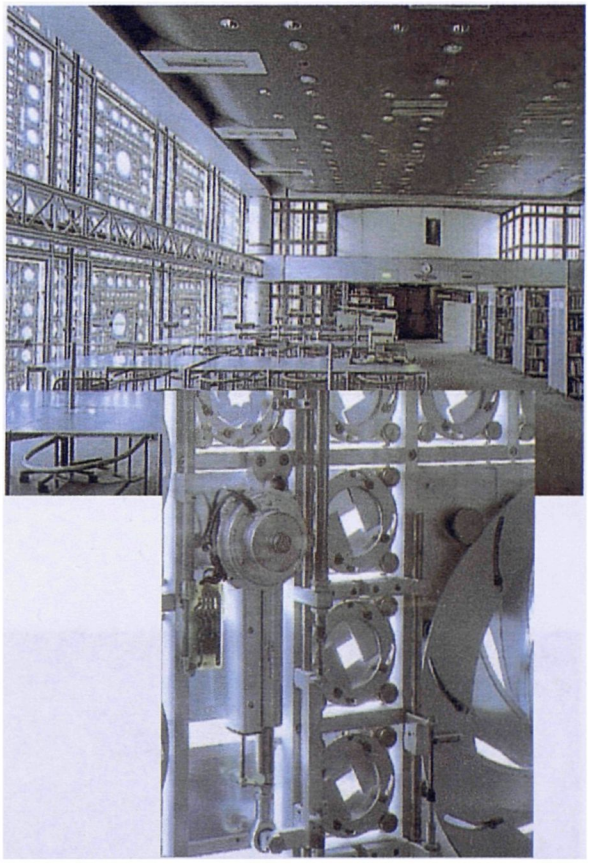


Fig. 6. Jean Nouvel, Institute of the Arab World, Paris, 1981-1987 (Puglisi 1999, 64)

According to Vidler, the forms created by this digital technology have replaced the previous forms of deconstruction and the earlier forms of rationalism, and therefore formed a "new vocabulary."[28]

Fig. 7. Greg Lynn with Michael McInturf and Douglas Garofalo, Korean Presbyterian Church, Sunnyside, New York, 1995-1999 (Zellner 1999, 144)

Commentary: A Digitally Inspired Typology

As mentioned earlier, Rossi held that a building's form was in response to the social context in which it existed. Similarly, following that architectural form responds to a search for legitimization in its time, Vidler's "first typology" is legitimized in nature itself where building forms mimicked nature's forms. Vidler's "second typology" finds its source in the machine age and derives its form from either machines themselves or becomes a product thereof. Looking in upon itself for reasoning is Vidler's "third typology," deriving from pre-existing architectural fragments. This was a product of the post-modern era and the desire to assemble the previously created fragments into a continuous form.

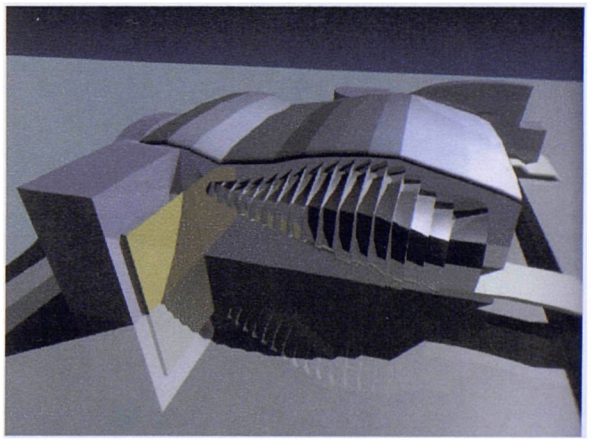


Fig. 8. Digital Model (Zellner 1999, 144)

Currently, architectural form is responding to the age of computers, much the same way it responded to the machine age. Contemporary building forms are a product of computer capability. Many of today's buildings are even manufactured directly from their digital format, reminiscent of modernism when architecture was also manufactured by its own inspiration, the machine. In addition to this, contemporary building forms are responding to the capitalistic nature of a consumer-based society. Hereby accepting both Vidler's and Rossi's terms, this relation would constitute a fourth typology. These buildings, by no means static and by all means a product of our digital culture, have their very own specifically digital aesthetic and form. Just as nature was replaced by the machine that was replaced by the city, the computer is the representative lens of current culture through which architectural form is conceived and architectural type is viewed.

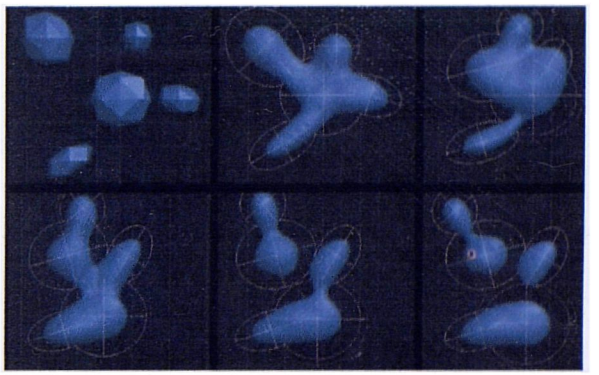
Greg Lynn's Korean Presbyterian Church in Queens, New York

Greg Lynn's recent Korean Presbyterian Church in Sunnyside, Queens, New York, was completed in 1999.[29] This project involved the conversion of two existing Art-Deco factory buildings, previously known as the Knickerbocker Laundry factory, into a 135,000 square foot combination of church and community center.[30] The Venice, CA based practice known as FORM answered with a revolutionary digital design technique that turned out a form without precedent and devoid of any tradition that completely converted the existing buildings for a purpose never intended for them.

FORM, in collaboration with Michael McInturf and Douglass Garofalo, designed the retrofitted structure using a "meta-blob" method. In short, this digitized method of design utilized the computer to balance out forms, each representative of a programmed space, according to gravitational force. With each purposeful offset of a form, others followed to maintain equilibrium. Once these forms reached equilibrium, the resulting volume fulfilled the spatial programmatic requirements. The resulting form was then integrated with the existing structural grid to introduce the circulation space.[31]

The completed building accommodates both church and community center functions with a 600-seat wedding chapel, a cafeteria of comparable capacity, and exhibition hall on the first floor. The basement houses a library, eight classrooms, a day-care center, five meeting halls, and the church offices. The pre-existing buildings retained their specifically industrial vocabulary with the help of some restoration. The addition "exploits the factory's eccentricities." All-together "a new kind of religious building" was created.[32]

The result of this digital method of design is a specifically digital building, both spatially and aesthetically. This design method, similar to Gehry's in its computer dependence, yields a building form that Greg Lynn refers to as "animate design." This design is based on movement possible only in software similar to that used by automobile and aeronautical design. Lynn believes the potential for an "animate architecture" of the future is held in today's software. His Korean Presbyterian Church is a paramount example.



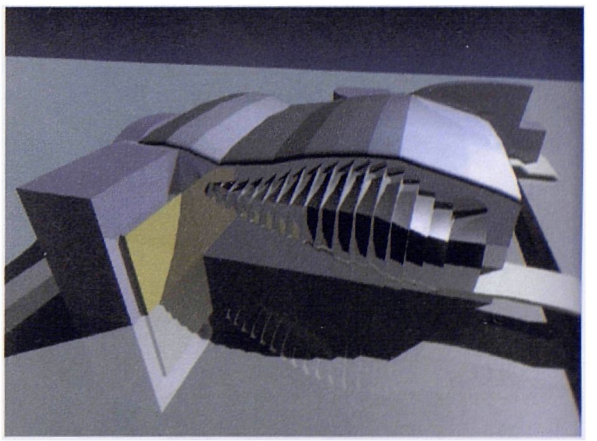


Fig. 9. Greg Lynn, Metablob process (Zellner 1999)
Fig. 10. Digital model (Zellner 1999)
Fig 11. Exterior view (*Casabella* 12/99)

Interestingly, this building still holds true to Vidler and Rossi's concept that function is completely independent of form. Here, we have a space functioning as both a community center and a church in a building originally intended to be nothing more than a factory. Despite this observation, this digital masterpiece turned into reality sets a clear example for the fourth typology. It responded to the contemporary digital culture with the computer used as a design determinant and the vehicle through which the resulting building was conceived. If it were not for the design capability of the computer, this building would not exist in its present form.

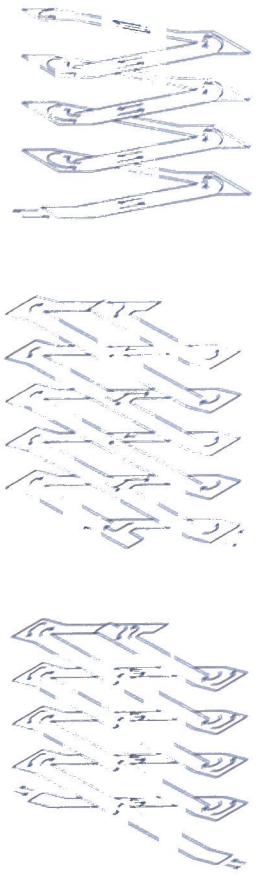


Fig. 12. Parking structure types (Chrest 1989, 17)

Typology in Parking Structures

Typology in parking structures is relatively easy to trace, especially considering that *Architectural Record*, *Timesaver Standards* and most parking structure planning books illustrate each of the known types of parking structures to begin their discussion. Parking structures are characterized by their own very stagnate set of types that have not adapted to anything over time with the exception of minor dimension changes for the accessibility of vehicles. Much like Quatremere's despised "model to be copied", these different types are based purely on function—something that both Vidler and Rossi have since detached from architectural form and type—and have not adapted to culture as demanded. Contemporary culture demands much more than a simple place to store a vehicle. The automobile industry has responded to consumer demand in creating automobiles that serve as mobile dwellings, offices, and family rooms. All the while, parking structures have remained in the same stage of development that they started in—accommodating automobiles manufactured during the days of Vidler's second typology.

Regarding Rossi's defining type and form as independent of function, architectural type of parking structures has been discussed throughout this document. It is the design profession that is guilty of classifying parking structures by their function as buildings of different type from any other. While their form is truly unique and identifies them as a

particular set of types, this has resulted in countless parking facilities that are good only for parking at any time. Recycling a parking facility is quite a design problem when any other use would require a majority of flat surfaces verses angled.

With careful attention to the way people currently use their automobiles, parking structures can better accommodate contemporary society. Out of this will come a hybrid type of parking structure that not only serves its function and many others, but is formed through the lens of its surrounding digital culture.

Automotive Design (Automotive Type)

When looking at automobiles, one can distinguish several different types. Typical contemporary consumer oriented automobile types include the car (often divided into small and large categories), the station wagon, the sports coupe, the van (often divided into mini- and full-size vans) the pickup truck, and the Sport-Utility Vehicle (SUV). These types are not necessarily based on function—the SUV that can handle a family and their cargo might lack four-wheel drive and therefore not be capable of the off-road driving that its ground clearance would permit. The station wagon could handle the family and their cargo in the same fashion without the lack of efficiency that comes with so much bulk. However, both types of vehicles are typically good for hauling cargo. Along the same lines of confusion between function and vehicle type, Subaru is offering their Legacy (a four-door sedan or station wagon) with four wheel drive and a ground clearance that makes that vehicle capable of off-road driving.[33] With this blurring of functions between automobiles of different form, it is form that becomes the defining element of automobile type.

More important is the use that the contemporary automobile actually receives from its owner. This is rarely dependent on the vehicle's actual capability. Automobiles are increasingly used for mobile family rooms with ceiling- or floor-mounted entertainment systems. Most of these systems are found in SUVs because of their size, but can be installed in any automobile of choice. Navigation systems in modern automobiles are slowly becoming full

computer systems, and any car can power a portable computer, therefore making the automobile an ideal mobile office environment. With wireless cellular technology, using the internet and taking calls in an automobile is perfectly attainable. And for many years past, the automobile has provided a temporary sleeping space for motorists not wanting to splurge on the luxuries of a motel room and a temporary place of refuge for employees wishing to relax in an environment outside of their place of work that is specifically theirs. Since the beginning of the automobile, it has provided a mobile semi-private environment, for better or worse, playing host to a variety of activities otherwise confined to a residence, office, or other type of building. Automobiles are increasingly seen as something more than just a mode of transportation—their envelope is beginning to function more like that of an actual building in that the activities inside are increasingly mobile versions of what takes place within a building's envelope. Automobile culture is progressing to another level with the capability to house digitally oriented functions, and the architecture of automobile storage spaces should respond accordingly.

Conclusion

Digital architecture is accommodated by its own specifically digital aesthetic. The space created within these buildings, devoid of all concern for the human being, is also specifically digital. Until its creation off-screen, it exists as simply a definition of virtual space, or as cyber-architecture. This space is without practical limits on the computer screen and is only understood completely when experienced by the human in physical form, usually not until the building's completion of construction. This leads to different kinds of spaces; spaces for better or worse often not explored with traditional design methods.

Despite the above observation, we must accept this change in order to progress. Consider the following:

> [The] idea of having to know it all is the legacy of the past, when humanity mistakenly had the feeling of being in control of its own inventions... Today one should learn to swim in the deep data oceans and regard information as a vast and rich sea engulfing us... a sea that is growing and is flooding the earth... if we do not drown, we will learn to float freely in this excessive sea.[34]

The automobile, perhaps the most technologically advanced product of industrial design in the world, should be looked to for its response to this digital revolution. It was the industrial revolution that brought about the automobile that was so important to Vidler's "second typology". This brilliantly designed object, now a product of the digital information age, is as present in this fourth typology as it was earlier. Architectural design should take cues from the automotive industry to better accommodate the automobile when it is such an integral part of a building type.

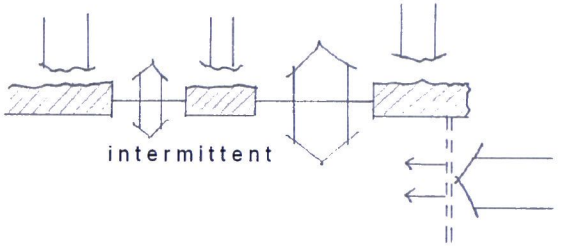
It is through the computer that architecture becomes a product of our digitized society. Without accommodating current societal conditions, architecture, just as automobile design, would "drown" in the continuing quest for efficiency and automated productivity. As set forth in the earlier relationships of architecture to nature, architecture to the machine, and architecture to the city, the computer is the current vehicle through which architectural type is viewed. Most contemporary architecture has rightly responded, as in the past, by becoming a product of this digital medium.

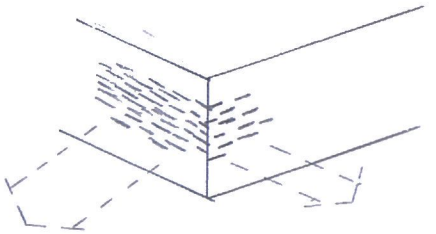
ISSUE 1: LEGIBILITY (USE)

Goal: The building's use should be clearly communicated to the surrounding community in a visually pleasing manner.

Design Response 1: The building's use will be revealed through an *intermittent transparent state* that will allow the building's purpose to be easily read from the exterior. Through using an *intermittent transparency*, the facility will not become an overly legible eyesore that is so common in parking facilities today.

Design Response 2: The building will utilize graphic elements of a digital nature relevant to its urban environment to communicate its use. These may include digital projections or a cladding of digital display to the surrounding environment. This is an alternative to *cladding* the structure with a façade not related to its use, the opposite of the overly legible parking facility.





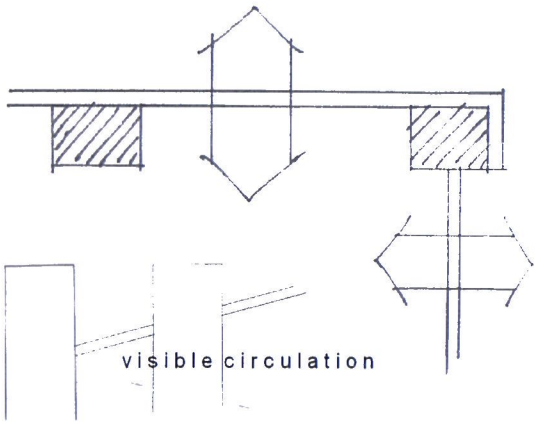
communication

ISSUE 2: TECTONICS

Goal: The building should have a clear hierarchy between architectural elements that help to define an identifiable hybrid parking structure type.

Design response 1: The *structure* is a functional necessity that will define the building's form and will allow the pedestrian and vehicular circulation systems to be visible from the exterior.

Design Response 2: *Cladding* can occur between the structure or enclose it, will communicate the building's inner workings to the outside, and will enable the building as a whole to interact with its surroundings by accommodating the infiltration and display of digital information relevant to the building's use and its context.

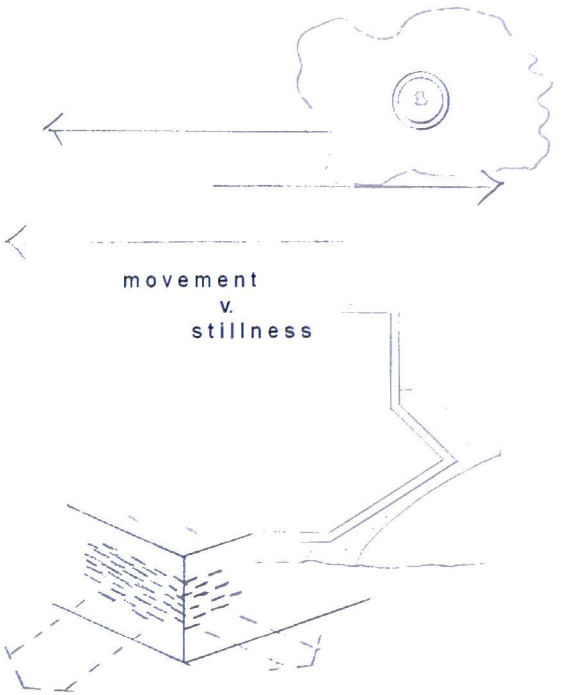


ISSUE 3A: MOVEMENT

Goal: The building should be expressive of the activity taking place within and around it.

Design Response 1: The building's fluid circulation elements will be visible from the exterior and will clarify the movement between the activities within to the outside.

Design Response 2: The building will utilize digital display panels in archi*tectonic* forms to communicate the activity within and to mirror the movement of its urban context.



ISSUE 3B: STILLNESS (CONTENTMENT)

Goal: The building should provide a sense of contentment to its patrons that encourages their prolonged presence. This has to counteract the constant element of movement in a parking structure.

Design Response: Elements such as street furniture, trees and shrubs, fountains, and sculptural pieces will be used to provide a sense of welcomed permanence to patrons. *Movement* is required to maintain the perception of security, yet *stillness*, or a sense of *contentment*, is required to encourage a patron's prolonged use and presence in the parking structure.

PRECEDENT STUDY 1: KENNEDY TWA TERMINAL

Eero Saarinen
New York, New York
1962

Eero Saarinen's TWA Terminal at Kennedy International Airport is both a building and a work of art. All necessary interior spaces are sculpted directly into the building's form, while the exterior takes the form of a bird preparing to take flight. There are curving mullions between the sculpted concrete sides of the structure that allow a transparency, similar to Saarinen's terminal at Dulles.[35] This building responds to the movement through the lens of which it was so carefully designed and sculpted. The form of this building clearly conveys the building *type*. Sadly, there is talk of demolishing this building in favor of Kennedy Airport's current expansion needs.

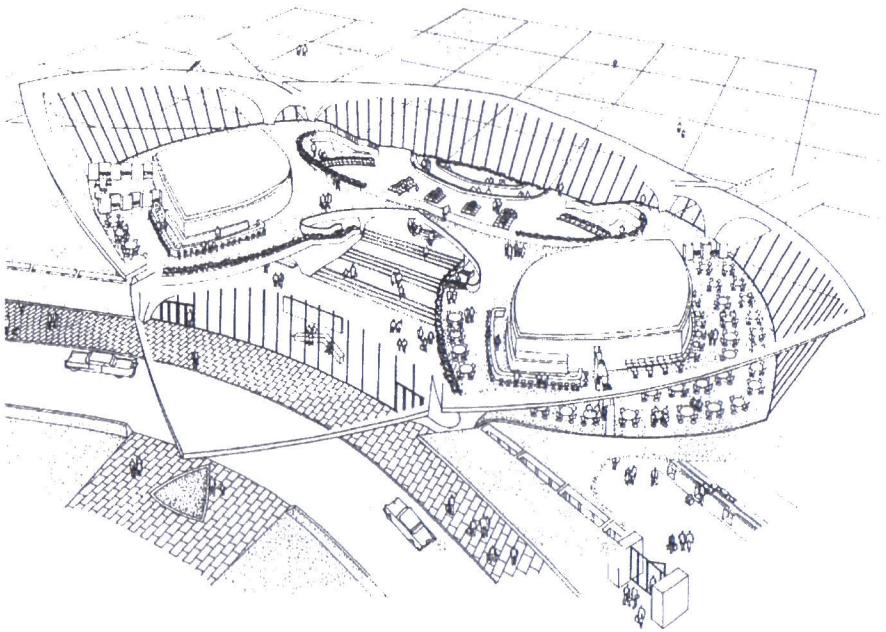
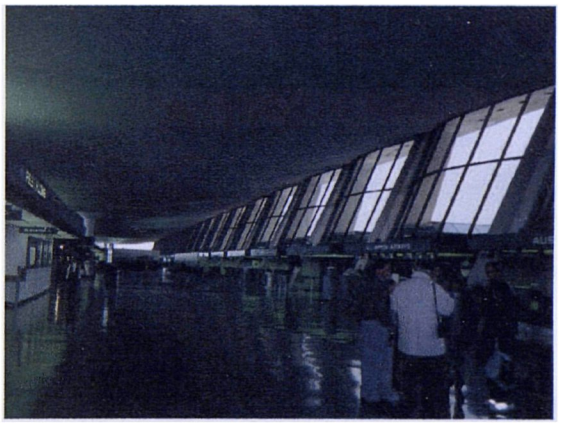


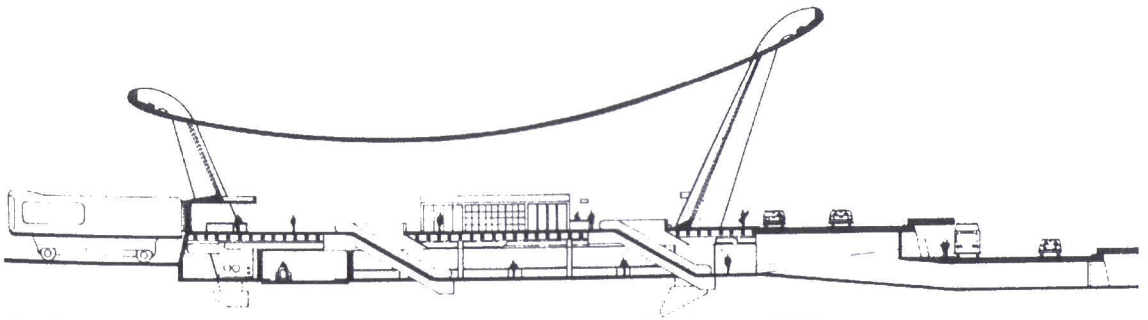
Fig. 13 (left). Axonometric, Kennedy TWA Terminal (*GA Document*, *Eero Saarinen* 1972)
Fig. 14 (above). Exterior view (Curtis 1996, 516)

PRECEDENT STUDY 2: DULLES INTERNATIONAL AIRPORT

Eero Saarinen
Chantilly, Virginia
1962

Eero Saarinen's Dulles International Airport main entrance terminal serves as the exchange of transportation from automobile to plane. People park or are dropped off in front of this dynamic form where they check in for their flight and check their luggage. They then depart from the back of the structure via specially designed busses that transport them to their respective terminals.[36] The terminal's massive concrete roof appears much lighter than it is, as Saarinen sculpted it in a way that makes it appear as if it is taking flight. The roof rests on a series of angled columns that are sculptural elements themselves, in between which is anchored the curving mullions that enable both the structure's transparency and enclosure.[37]





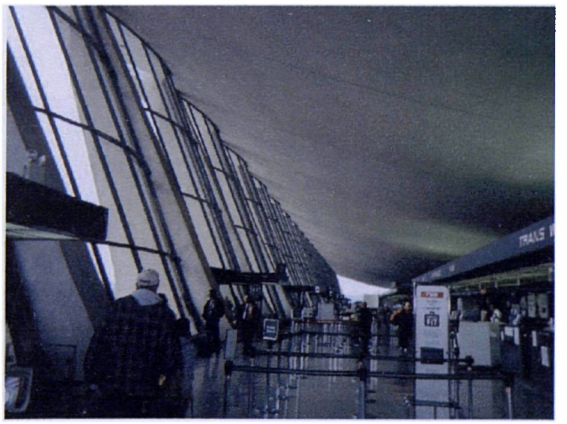


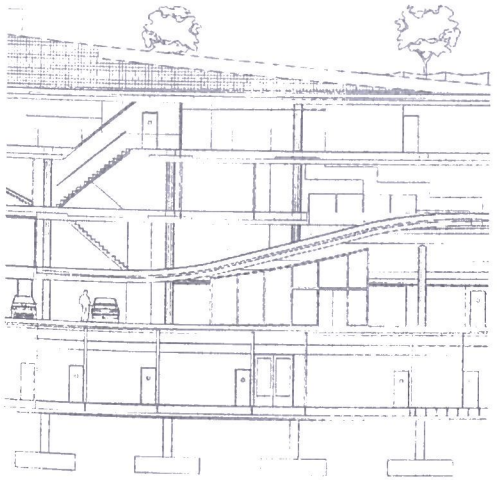
Fig. 15 (above). Section, Dulles International Airport (*GA Document*, *Eero Saarinen* 1972)
Fig. 16 (above right). Exterior view
Fig. 17, 18 (right). Interior views

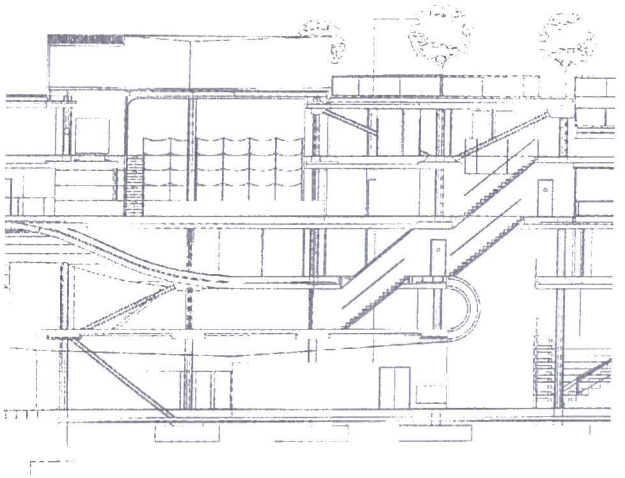
PRECEDENT STUDY 3: VILLA VPRO

MVRDV
Hilversum, Netherlands
1993-1997

MVRDV's Villa VPRO is home to the VPRO Public Broadcasting Company. This building's transparency is a metaphor to its inhabitant's purpose, to transmit information. The gently folded concrete forms allow the interior of the building to become "one continuous space" and aid in explaining the flow pattern in section. The electrical conduit, plumbing, and data cables are incorporated into the flowing concrete forms rather than into the ceiling. The exterior of one of the building's folds creates an obvious space for covered outdoor parking, formed to engulf the automobile as the driver enters the shelter of the building's shell.[38]

Fig. 19 (below). Sections, Villa VPRO (Jodidio 1999)
Fig. 20 (above right). Exterior views (Jodidio 1999)
Fig. 21 (below right). Interior view (Jodidio 1999)

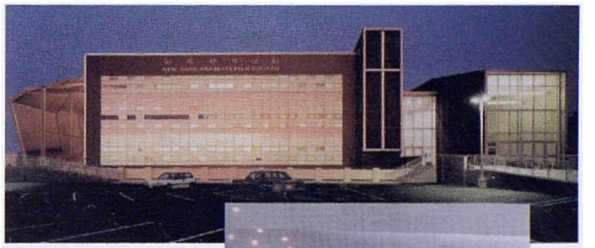




PRECEDENT STUDY 4: KOREAN-PRESBYTERIAN CHURCH

Greg Lynn FORM
Sunnyside, Queens, New York
Renovation completed 1999

Through the use of digital design techniques, Greg Lynn has successfully created a hybrid *type* of worship space. Although it has always been said that worship can take place anywhere, the conversion of a factory building into a church is virtually unheard of. From capabilities of the computer and Lynn's "meta-blob" design method, a form capable of housing a worship hall was born within the shell of a factory.[39] This "new kind of religious building"[40] fits well into its context with its pre-established industrial vocabulary but possesses a function far different from that originally intended, thereby creating a new *type* of religious building.[41]



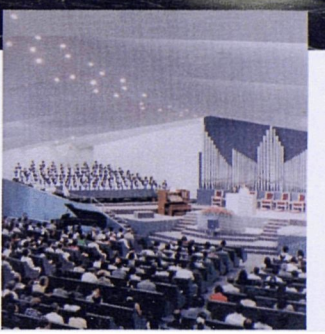
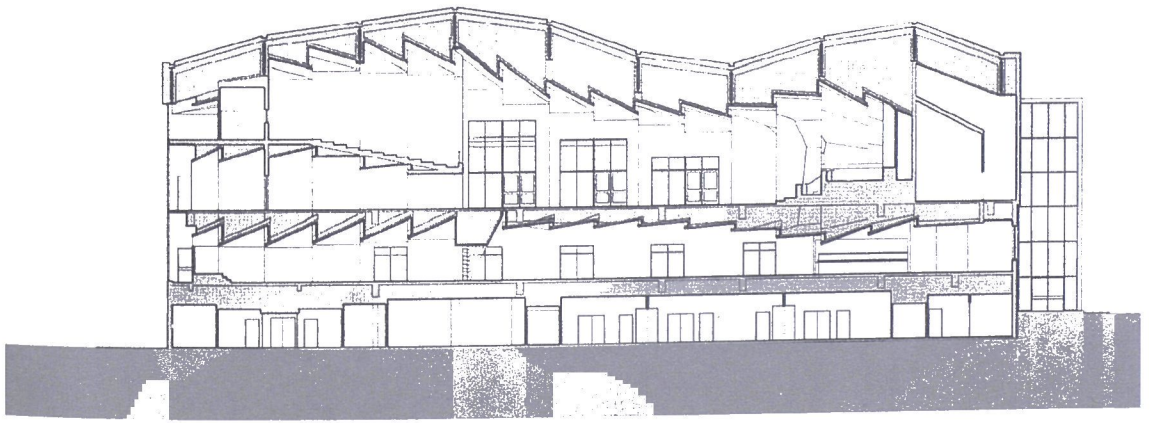
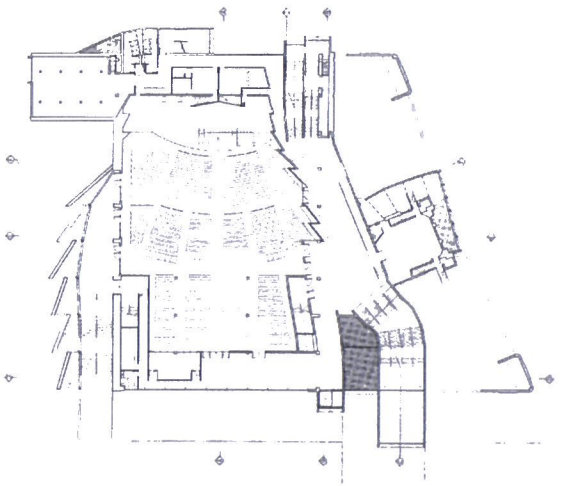


Fig. 22 a, b (above right). Exterior views, Korean-Presbyterian Church (*Architecture* 10/99)
Fig. 23 (right). Interior view of sanctuary (*Architecture* 10/99)
Fig. 24 (below). Section through sanctuary (*Cassabella* 12/99)
Fig. 25 (below right). Fourth floor plan (*Cassabella* 12/99)





Notes

1. Anthony Vidler, "The Production of Types and The Idea of the Type: the Transformation of the Academic Ideal." *Oppositions 8* (Spring): 443.
2. Raphael Moneo, "On Typology." *Oppositions 13* (summer).
3. Samir Younes, *The True, the Fictive, and the Real: The Historical Dictionary of Architecture of Quatremere de Quincy* (London: Andreas Papadakis, 1999), 37.
4. Anthony Vidler, "The Third Typology," *Oppositions 7* (Winter): 288-294.
5. Ibid., 291.
6. Ibid., 291-294.
7. Aldo Rossi, *The Architecture of the City*, trans. Diane Ghirardo and Joan Ockman (Cambridge: the MIT Press, 1982), 41.
8. Anthony Vidler, "The Third Typology," *Oppositions 7* (Winter): 292.
9. Anthony Vidler, "The Productions of Types and The Idea of the Type: the Transformation of the Academic Ideal." *Oppositions 8* (Spring): 438.
10. Anthony Vidler, "The Third Typology," *Oppositions 7* (Winter): 288-294.
11. Anthony Vidler, "The Productions of Types and The Idea of the Type: the Transformation of the Academic Ideal." *Oppositions 8* (Spring): 438.
12. Anthony Vidler, "The Third Typology," *Oppositions 7* (Winter): 293.
13. Nan Ellin, *Postmodern Urbanism* (New York: Princeton Architectural Press, 1996), 93.
14. Peter Zellner, *Hybird Space* (London: Thames and Hudson Ltd., 1999), 8.
15. Ibid., 8-9.
16. Le Corbusier, *Towards a New Architecture*, trans. Frederick Etchells (London: The Architectural Press, 1946), 10.
17. Peter Zellner, *Hybird Space* (London: Thames and Hudson Ltd., 1999), 9.
18. Ibid., 9.
19. Anthony Vidler, "Take One." *Architecture* (December 1999): 180.
20. Observation by author. Summer 2002.
21. Peter Zellner, *Hybird Space* (London: Thames and Hudson Ltd., 1999), 12.
22. Ibid, 34.
23. Luigi Prestinenza Puglisi, *Hyper Architecture* (Basel, Switzerland: Birkhauser, 1999), 63.
24. Ibid., 66.
25. Anthony Vidler, "Take One." *Architecture* (December 1999): 180.

26. Anthony Vidler, "The Medium and its message, or 'I'm sorry, Dave, I don't have enough information'." *Architectural Record* (May 2001): 71-72.
27. Maria Luisa Palumbo, *New Wombs* (Basel, Switzerland: Birkhauser, 2000), 58.
28. Anthony Vidler, *Warped Space: Art, Architecture, and Anxiety in Modern Culture* (Cambridge: The MIT Press, 2000), preface.
29. Peter Zellner, *Hybird Space* (London: Thames and Hudson Ltd., 1999), 145.
30. "The Korean Presbyterian Church of New York: Garofalo Architects, Greg Lynn FORM, and Michael McInturf Architects." *Architect* v. 86 n. 1 (January 1997): 80-81.
31. Peter Zellner, *Hybird Space* (London: Thames and Hudson Ltd., 1999), 142.
32. Ibid, 145.
33. Http://www.subaru.com, accessed 19 October 2003.
34. Kas Oosterhuis in Peter Zellner, *Hybird Space* (London: Thames and Hudson Ltd., 1999), 76.
35. Yukio Futagawa, ed, *Eero Saarinen: TWA Terminal Building and Dulles International Airport*, Global Architecture (Tokyo: A.D.A. EDITA Tokyo Co., Ltd., 1973).
36. Ibid.
37. Observation by author, November 2002.
38. Phillip Jodidio, *Building a New Millennium* (New York: Taschen, 1999), 368-369.
39. Peter Zellner, *Hybird Space* (London: Thames and Hudson Ltd., 1999), 142.
40. Ibid., 145.
41. Greg Lynn's Korean Presbyterian Church is discussed in greater detail earlier in this document.

FACILITY

EPISTEMOLOGY OF PARKING SOLUTIONS

History of Parking

With an estimated 500 million cars in the world, about 240 million of those on American roads[1], the issue of storing automobiles when they are not in use is more critical than ever before. When the idea of the automobile was first conceived, no one dreamed that storing it would someday become such a dilemma.

Storing a mode of transportation can be traced back to tying a horse to a post in front of a store on a downtown street and storing and feeding the horse in a stable at home. Horses that were "parked" on the street were often parked in the same manner in which cars are parked today on the street. These horses may have been tied to a hitching post or a part of the building they were in front of; cars today are parked just as close to a building as possible in the same fashion.

Precedents to contemporary parking are found as far back as the seventeenth century in Europe. Palaces typically included a type of circular drive, known as a porte-cochere for people to be dropped off from their coaches near the entrance. Following this, the coaches were taken to a designated storage space. Only nobility could afford such accommodations, and only in Europe did such a condition exist so often. Porte-cocheres appeared in the United States along with luxury hotels and apartments but were rare. It was not until the popularity of the affordable automobile that parking became a serious subject to American architects and town planers. Those individuals living on large enough grounds who could afford the luxury would simply have a servant drive the motor-coach from a carriage house to the front door of the main house. It was not until after the beginning of the twentieth century that space meant for people and social interaction between typical middle-class homes became space to store the private automobile.[2]

Architects and designers throughout the world responded to the presence of the automobile. Daniel Burnham's City Beautiful Movement was greatly influenced by the car

with its tree-lined boulevards cutting through vast spaces of uniformly arranged Beaux Arts buildings. In 1932, Le Corbusier proposed his Plan for Algiers that included the sweeping form of the highway as a major component placed directly above a winding block of housing.[3] It is interesting to note that most early examples of automobile oriented planning were centered on the aura of movement that accompanied the automobile and did not care to address the space needed for storage of it when not in use.

A later, more notable example of the automobile's affect on architecture came with Bertrand Goldberg Associates' Marina City in Chicago, Illinois (1967). Each of the two buildings is a cylinder carved in a corn cob fashion with residential units sitting upon a cylindrical parking structure. Each parking structure occupies eighteen of a total of sixty floors.[4] Both parking structures accommodate the parking demand of the condominiums above and also provide parking for the nearby House of Blues and other attractions.[5]

Early automobiles were dirty; they produced excessive noise, an exhaust with an odor, and involved the storage of dangerous fluids and materials. Residential garages, as an effect of this, began as utilitarian structures built as far away from their accompanying house as possible. Alleys became prevalent in residential areas, as they provided a space for the garage that was out of sight to passers-by. Companies such as Sears Roebuck and Company began selling the prefabricated garage structures that often included space for other uses such as shops and housing for servants and local laborers.[6]

Alleys became common in the downtown scene too; they were well-suited for deliveries to buildings and for entrances to back parking lots and parking structures. This was a product of the early desire to hide the vacant automobile as much as it could be hidden. Parking access from an alley often did not provide enough space for the growing number of automobiles on the road, so buildings gradually grew farther apart in order to accommodate the storage of vehicles between them. This resulted in the demolishing of many vacant buildings, leaving street facades in most cities dotted with the lack of façade that comes with a surface parking lot.[7]

Alleys, however popular they were to hide unsightly vehicular storage spaces, delivery spaces, and trash-dumpsters, gradually became slums between the well-traveled and well-kept streets they served.[8] As havens for low-cost housing, they were often not kept in desirable aesthetic condition and became host to many unlawful activities.

Alleys were therefore rarely constructed by the late 1930's and the residential garage moved forward on its lot and started to face the street for the first time ever. These structures were clad in decoration for the first time ever, most of them matching their accompanying house. Garages were now visible from the American residential street and became an expected component of all new neighborhoods and symbols of status.[9] Dressing up these garages in the style of their neighboring houses marked the initial attempt of parking structures to fit in with their surroundings by hiding behind a somewhat fake façade.

While the garage's moving from back to front freed up back yards for recreational use, the ability to generate social interaction that front yards once possessed began to disappear. Garages were soon built as direct appendages of their houses as cars gained a cleaner image and gradually earned their owner's trust as safe machines.[10] This was undoubtedly a step toward the *muscle car* of the mid-twentieth century that was so revered by American culture, a culture eternally influenced by the automobile. A neighbor revving up his car's engine was no longer cause for disgust at the dinner table; it evoked excitement like no addition to American culture had ever done before.

Parking Structures, Specifically

With parking convenient to the driver's destination becoming harder to accomplish, Dallas's 1931 Highland Park Shopping Village turned its buildings away from the street in favor of creating a pedestrian link between the buildings that also connected different parking areas. This was the first shopping experience of its kind, but only the beginning of the idea of the modern shopping mall.[11]

With the consistently growing need for parking in downtown areas, parking space between, behind, and around buildings was not enough. The parking structure was the answer to this dilemma; it allowed cars to be stacked rather than placed horizontally, therefore taking up less space at street level. Automated parking structures literally placed cars in a type of vertical parking lot requiring an attendant, while ramped parking structures took the form of winding parking lots in gradual elevation over their surrounding streets.[12]

Holabird & Roche's 1918 solution for parking at Chicago's Hotel La Salle was among the first to result in a multi-level parking structure.[13] In 1927, Ralph Harrington Doane's Park Square Motor Mart was awarded Boston's Harleston Parker prize. In 1933, the Chicago World's Fair set a record for the largest parking terminal in the world, with its "Parking Terminal" having a capacity of 24,000 automobiles. San Francisco's Union Square municipal parking garage pioneered underground parking in 1942. This garage had space for 1,700 vehicles on four levels beneath grade and was published in pre-war promotional literature as being a possible "air raid shelter".[14]

The use of parking structures has not changed since their first appearance. They are simple structures, built only for the economical storage of automobiles while drivers are a part of the urban scene in other buildings and along streets. Most contemporary parking structures are celebrated simply because of their ability to become an integral component of a film set with their naturally dark interiors closed off from all surrounding activity. New parking structures that stand out from these notoriously dangerous and unfriendly structures are rare.[15]

Despite the fact that parking structures were created to accommodate the automobile, they have not kept up with the automobile industry. Much like Henry Ford's Model-T available "painted any color so long as it [was] black", parking structures remain as bland and basic as the first automobiles they served. Automobiles as mobile offices and family rooms have become more popular than ever.[16] This can undoubtedly be traced back to the drive-in movie theater, and more currently relates to the personal televisions and computers increasingly

found in automobiles today. As the car is now an extension of what happens in the home, spaces exclusively for the storage of the automobile are being developed to serve other functions as needed. This can be seen by the residential garage transformed into a shop, office, or additional bedroom.[17] Despite this, modern parking structures have yet to adapt to anything other than the storage of the automobile.

Safety in Parking Structures

For the purposes of this document, the term *security* will be used in discussing protection of patrons and the facility itself from criminal activity. Protection of patrons from physical harm will be referred to in terms of *safety*.[18] Both safety and security in parking structures are issues that demand attention. Although addressing these issues should be a basic requirement of the design of any type of parking structure, these facilities have a history of high amounts of criminal activity. Properly addressing the issues of security and safety will have a noticeable positive effect on the future state of parking facilities.

As mentioned previously, parking lots and structures tend only to be celebrated because of their notorious function as scenes for theft, rape, murder, and other crimes in movies. This use is not without reason though; in reality, parking areas are the most dangerous of commercial facilities and second only to residential buildings in the highest of crime rates. Parking areas are typically large spaces with a lack of consistent activity, which makes them a haven for violent crime.[19] The following key factors for parking facility safety are interpreted from a 1996 essay entitled *Crime Prevention through Environmental Design in Parking Facilities* by Mary S. Smith.

Adequate lighting is the first and foremost factor in reducing crime in a parking facility. There must be both proper horizontal and vertical lighting for a successful lighting scheme. The horizontal plane (parking or walking area) must be well-lit, as should the vertical plane (keyholes, buttons, and graphics). "Uniformity" in lighting is the key, as this will help to prevent glare and require the least work of the eye in adjustment to varying levels of light.

Lights should be placed in the area they are meant to illuminate rather than adjacent to the area, also a measure against glare.

Natural surveillance is a requirement of a secure parking facility. First of all, maximizing parking on flat surfaces and minimizing parking on steeply ramped surfaces allows for better visibility of one's surroundings. Parking decks should each be as open as possible with avoiding shear walls as this can completely block the visibility of an entire portion of a deck. Pedestrian egress should be brought together as much as possible so that people are in view of others often. Dead end parking bays and paths should be avoided as this can set up a trap for a victim. Planning a parking facility that allows the eyes of passers-by to survey their surrounding environment is a requirement of a safe and secure facility.

Stair and elevator towers should be constructed in a transparent fashion to allow the pedestrian to see the interior condition before they enter. Elevator lobbies should be open to parking areas above and below ground level and to the outside on ground level. These guidelines are most important in that they allow people outside of the structure to see what is happening inside of it, possibly deterring a criminal from acting and allowing witnesses when crime does occur.

Access to a parking facility should be in accordance with its surroundings. There may be a set of gates that completely close off the facility when there is no need to park in the area. Any pedestrian exits to street level in a secure facility should be only emergency exits with panic hardware attached to an alarm system. Controlled access also reduces the possibility of crime in that a criminal may not be comfortable with interacting with an attendant or showing up on a video monitor by an automated ticket machine.

Graphics should be clear, readable, and easily understandable. They should be placed where they will be most easily seen and should assure pedestrians of any existing surveillance. Colors may be used to help people efficiently locate their parked car.

Restrooms in a parking facility are typically not secure places and should be avoided whenever possible. If restrooms are not accessible near the parking facility and are needed

within it, they should have "maze-type entrances" instead of doors that could be blocked to trap someone.

A variety of surveillance systems can be used. These include emergency phones, voice-activated intercoms, panic buttons, sound surveillance and closed circuit television. It is especially important to recognize the weaknesses of the latter system though, as CCTV will only work well with adequate illumination and is obscured by obstructions such as parked cars, structural elements, and shadows.

Although design can aid in creating a safer environment, visible security personnel are one of the most important steps to a secure facility. Rounds should be made on a random schedule and personnel should be in appropriate uniforms and vehicles with identification. This, like all other guidelines listed previously, adds to both the literal security and safety of a parking facility and the psychological feeling of security and safety.

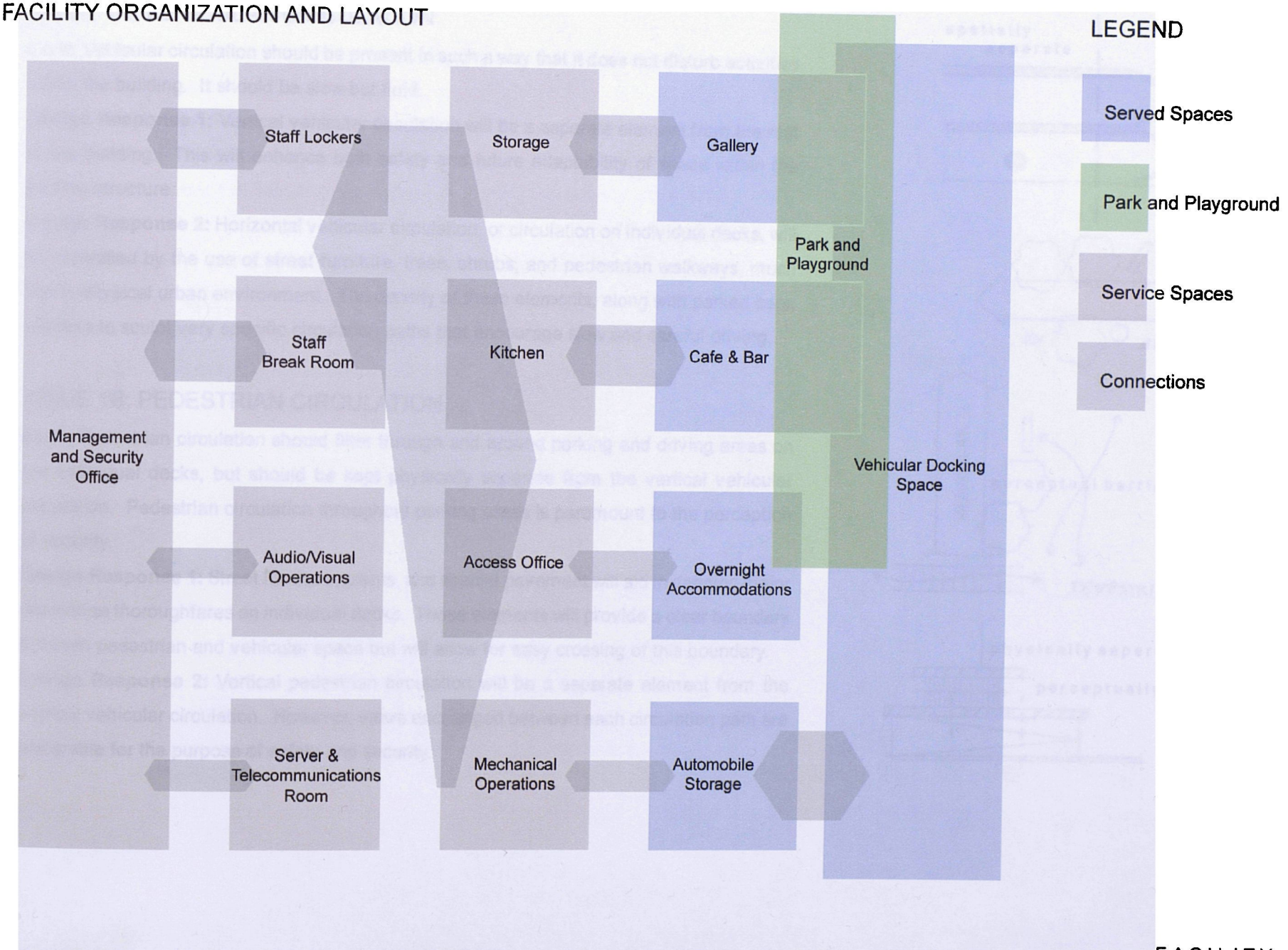
MISSION STATEMENT

This parking structure will aim to accommodate the contemporary automobile, its driver, and passengers. The first step in doing so is a pragmatic one: integrating multiple uses with the simple function of parking. While this is a basic requirement of a lively and safe facility, it will allow the facility to become a product of the digital age in a manner intinsic to its use. This differs from other parking facilities meant solely for the storage of automobiles. The facility's multiple integral uses will then be tied together by applying the lens of a digitized society; a society that is currently demanding these greater uses of a parking structure to accommodate and to parallel the communication, business, and entertainment capabilities and overall mobile living conditions found in modern automobiles.

The facility programmed herein harbors what we are capable of accomplishing from an automobile today. Some of these capabilities are products of the digital information age *in* which this facility is programmed, others are products of the automobile itself and have existed as long as the automobile *for* which this facility is programmed.

The logic of the spatial arrangement portrayed on the following pages follows that set forth by Louis Kahn. The programmed building is divided into two main sets of spaces: served and service spaces. The served spaces are those meant for patrons and are further divided into categories based on the type of activity taking place within, including the parking areas. The service spaces include all staff spaces, management offices, and unassignable spaces such as restrooms and mechanical rooms. Automobile storage is incorporated for those who wish to leave their cars while they pursue other activities outside of the facility. This space's vertical extension enabled by its mechanical innards will allow it to become an icon for the building to the city. Vehicular docking space allows patrons to operate from their automobiles as they enjoy the varied spaces within the facility that are meant to weave into and become integral parts of the docking space.

FACILITY ORGANIZATION AND LAYOUT

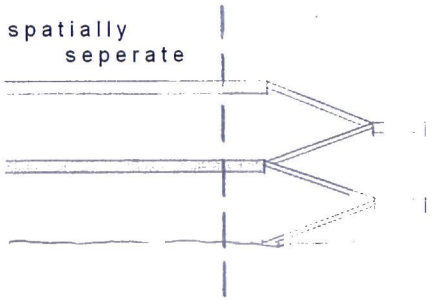


ISSUE 1A: VEHICULAR CIRCULATION

Goal: Vehicular circulation should be present in such a way that it does not disturb activities within the building. It should be slow but fluid.

Design Response 1: Vertical vehicular circulation will be a separate element from the rest of the building. This will enhance both safety and future adaptability of space within the parking structure.

Design Response 2: Horizontal vehicular circulation, or circulation on individual decks, will be controlled by the use of street furniture, trees, shrubs, and pedestrian walkways, much like in a typical urban environment. The density of these elements, along with parked cars, will help to sculpt very specific circulation paths that encourage slow and careful driving.

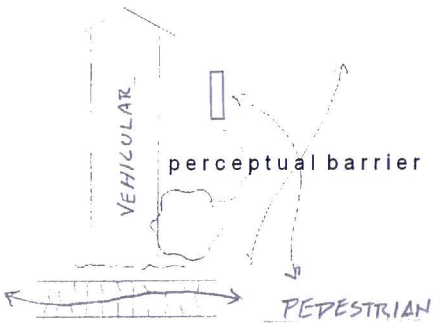


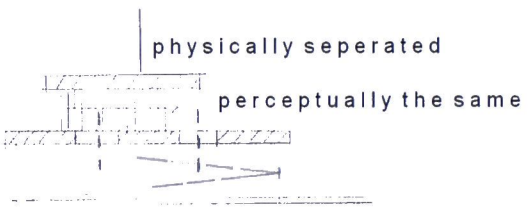
ISSUE 1B: PEDESTRIAN CIRCULATION

Goal: Pedestrian circulation should filter through and around parking and driving areas on the individual decks, but should be kept physically separate from the vertical vehicular circulation. Pedestrian circulation throughout parking areas is paramount to the perception of security.

Design Response 1: Street furniture, plants, and special pavement will aid in defining major pedestrian thoroughfares on individual decks. These elements will provide a clear boundary between pedestrian and vehicular space but will allow for easy crossing of this boundary.

Design Response 2: Vertical pedestrian circulation will be a separate element from the vertical vehicular circulation. However, views exchanged between each circulation path are preferable for the purpose of safety and security.

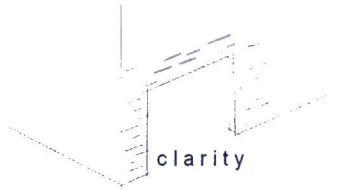




ISSUE 2: LEGIBILITY (ACCESS)

Goal: The building's pedestrian and vehicular access points should be clearly visible to an approaching automobile or pedestrian.

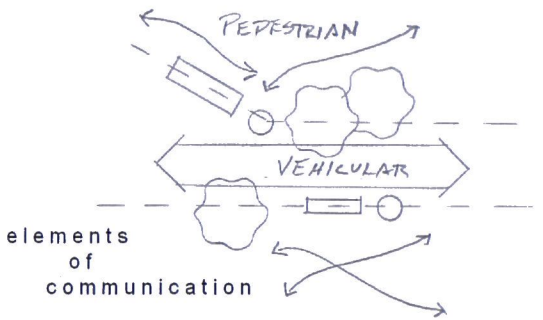
Design Response: Graphic elements of a digital nature will be utilized to make the automobile and pedestrian entrances visible from all angles of approach. Digital display panels employed on the exterior surface of the building will highlight access points.



ISSUE 3: SAFETY (Protection from physical harm; contrasts with *security*)

Goal: Pedestrian safety in a vehicular space should be emphasized in this facility.

Design Response: Pedestrian and vehicular pathways will be clearly graphically indicated and communicated with the use of different elements such as lighting, plants, digital displays, and architectural form. It is the density of visual information presented that will make the driver slow down.



ISSUE 4A: SECURITY (Protection from criminal activity; contrasts with *safety*)

Goal: This facility should be physically secure and retain a high perception of security at all times.

Design Response 1: All parts of the facility will be adequately lit and under constant digital surveillance (audio and video) with centrally located emergency call stations.

Design Response 2: The building will contain staff spaces that encourage the presence of staff at all times and should have an automated controlled access system enabled when there is no staff present.

Design Response 3: The building's inner-structure will be as minimal as possible to avoid blocking views across the decks.

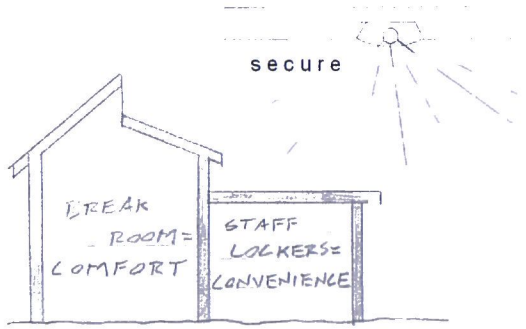
Design Response 4: This facility will encourage the use of a car as a place to stay. Cars will be oriented so that their inhabitants can easily watch their surroundings, keeping eyes on the whole structure.

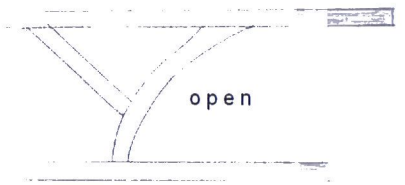
Design Response 5: The presence of a variety of different activities within the parking structure itself will harbor activity twenty-four hours a day and will therefore provide eyes on the entire structure.

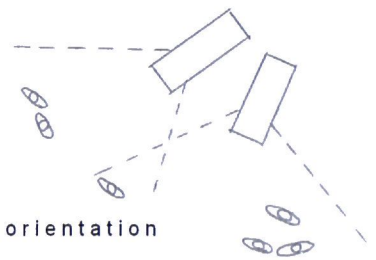
ISSUE 4B: VISIBILITY (ACCESS SECURITY)

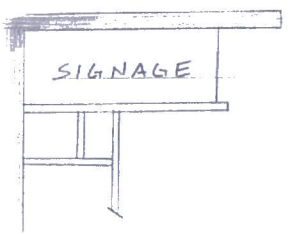
Goal: All elements within the facility should be highly visible to users and their use should be clearly communicated.

Design Response: Graphic elements and architectonic form will also be utilized on the interior of the facility to clarify each space's use.







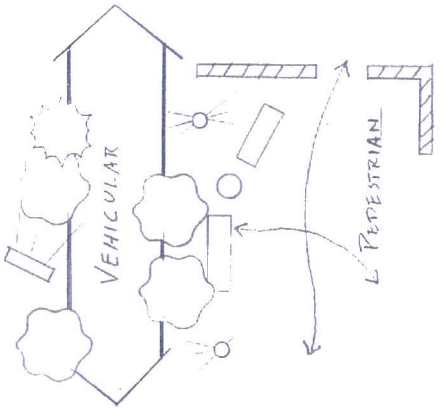


SYSTEM 1: CIRCULATION SYSTEMS

Performance Requirement 1: Pedestrian and vehicular circulation systems should be perceived as separate systems. This should be done in a humanizing manner which will contrast with the typical use of static and blatant barriers. A diverse group of elements should form what will be perceived as a boundary when necessary.

Performance Requirement 2: Pedestrian pathways need to be legible to both the pedestrian and driver. Pedestrian travel differs from vehicular travel in that it is often not in a linear form.

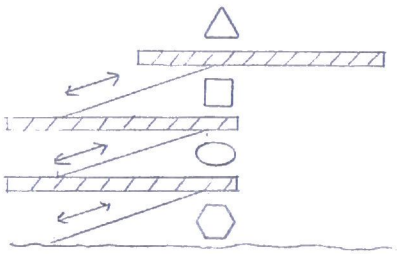
Performance Requirement 3: The circulation system and its density of visual information should encourage slow and cautious driving.



SYSTEM 2: WAYFINDING AND GRAPHICS SYSTEMS

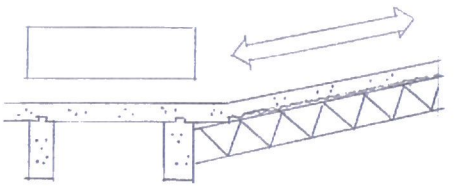
Performance Requirement 1: The wayfinding and graphics system should help patrons to understand their horizontal and vertical placement within the facility as they move throughout.

Performance Requirement 2: The graphics system should be perceived as an integral part of the facility. Signage should be seen a part of the architecture itself rather than in addition to the architecture.



SYSTEM 3: STRUCTURAL

Performance Requirement: The structural system should be expressive of the juncture of movement and stillness within the facility. It may chance in response to movement in the building.



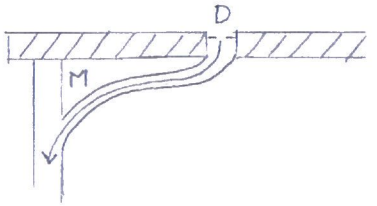
SYSTEM 4: CLADDING

Performance Requirement: The cladding system should be expressive of the activity happening within a certain space through its level of transparency, type of material, and texture. Considering this, the cladding system may vary throughout the exterior of the facility.

SYSTEM 5: MECHANICAL AND DRAINAGE

Performance Requirement 1: The mechanical and drainage systems should be viewed as an integral part of the architecture, rather than in addition to.

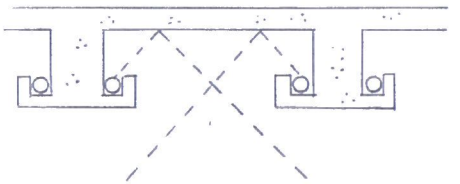
Performance Requirement 2: These systems should soften the facility's form and contribute to the feeling of comfort.



SYSTEM 6: LIGHTING

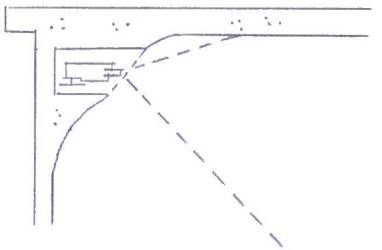
Performance Requirement 1: The lighting system should become a part of the architecture itself, rather than an addition to it. The architecture should be utilized in creating different lighting effects, such as indirect lighting.

Performance Requirement 2: The lighting system should help to create a warm environment within the facility that enhances the appearance of the interior and of objects on display.



SYSTEM 7: SECURITY

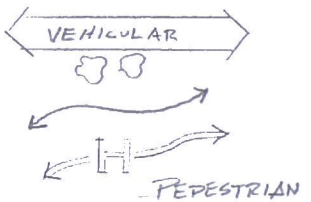
Performance Requirement: The facility's security system should not be perceived as obtrusive. As electronic and digital security means are necessary, they should be seen as part of the building's form.



SYSTEM 8: ACCESSIBILITY

Performance Requirement 1: The accessibility system should be integrated into the overall design of the facility so that it does not become a burden to the wayfinding system or separated from the rest of the facility.

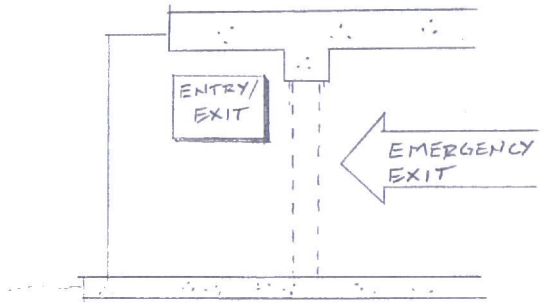
Performance Requirement 2: Accessible routes should be expressed as an extension of the facility's pedestrian circulation system when they cannot be a part of it, rather than becoming additions to it.



SYSTEM 9: FIRE/LIFE SAFETY

Performance Requirement 1: Fireproofing should be viewed as integral with the structure; it should not be in addition to, where it can often become something unsightly.

Performance Requirement 2: The life safety system should become a part of the commonly used circulation system to contribute to the building as a whole, rather than several parts.

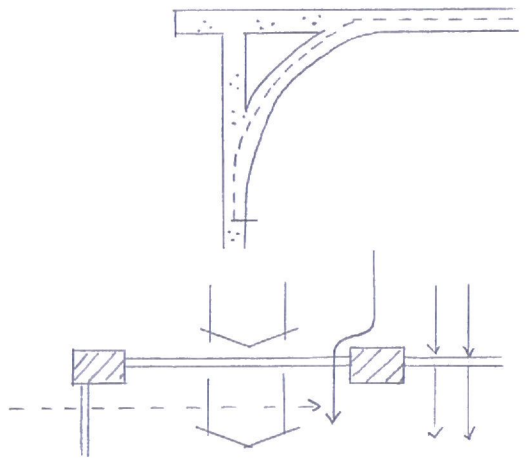


SYSTEM 10: DIGITAL INFORMATION SYSTEM

This system is paramount to the proposed project becoming a hybrid parking structure geared toward the digital era in which we live. Activities taking place in the structure may include surfing the Internet, watching television, talking on a cellular phone, and any other possible digital capability.

Performance Requirement 1: Wiring for any type of docking stations for non-wireless devices should be part of an architectonic element that is part of the building itself.

Performance Requirement 2: The construction of the facility should allow for the non-physical parts of the digital information system, or information flowing wirelessly, to flow without interruption.



AUTOMOBILE STORAGE, NO OCCUPANTS PRESENT (SERVED)

Activities: Storage of vehicles when not in use

Users: Patrons and employees through mechanical parking system

Number of Users: 1 per automobile, staff to operate mechanical parking system

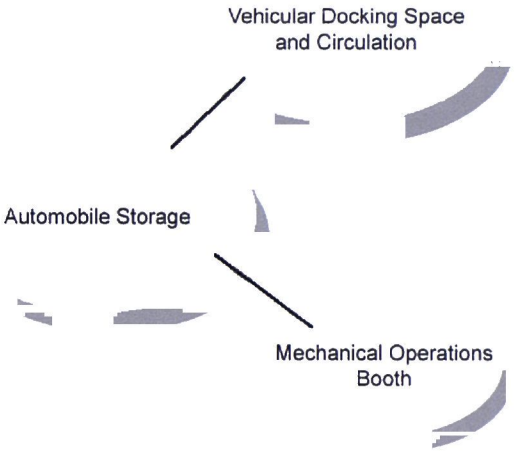
Space Allocated: 160 square feet per automobile parking platform[20]

Applicable Issues: Legibility, safety, security

Equipment: Mechanical automobile lifts and parking platforms

Adjacencies: Vehicular Docking Space, Mechanical Operations

Performance Requirement: This space should increase legibility by acting as an icon for the facility. The movement of the mechanical systems inside and the placement of automobiles should be visually filtered but obvious from the outside.



VEHICULAR DOCKING SPACE AND CIRCULATION (SERVED)

Activities: Viewing of surrounding digital displays (television, movies, digital art), ordering food or drinks, resting, lounging or interacting with others beside or near automobile, other various activities per user

Users: Drivers and passengers of automobiles

Number of Users: Varies, dependent on amount of automobiles present

Space Allocated: 350 square feet per automobile including circulation space[21]

Applicable Issues: Circulation, safety, security, legibility

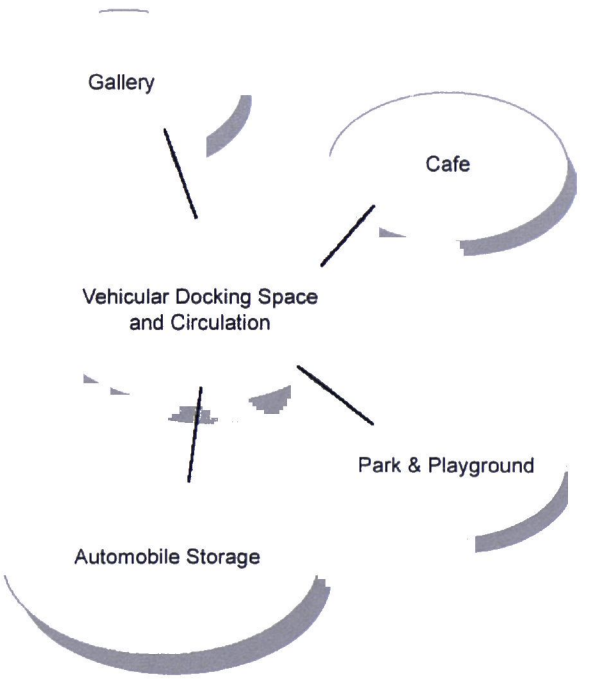
Equipment: Automobile docks

Adjacencies: Gallery, café, bar, park, playground, automobile storage

Performance Requirement 1: Natural light should enhance views of displays.

Performance Requirement 2: Natural ventilation should provide a comfortable climate and air filter.

Performance Requirement 3: Patrons should have view and orientation options in parking.



GALLERY (SERVED)

Activities: Viewing of surrounding displays

Users: Drivers and passengers of automobiles, patrons on foot

Number of Users: Varies

Space Allocated: 2000 square feet

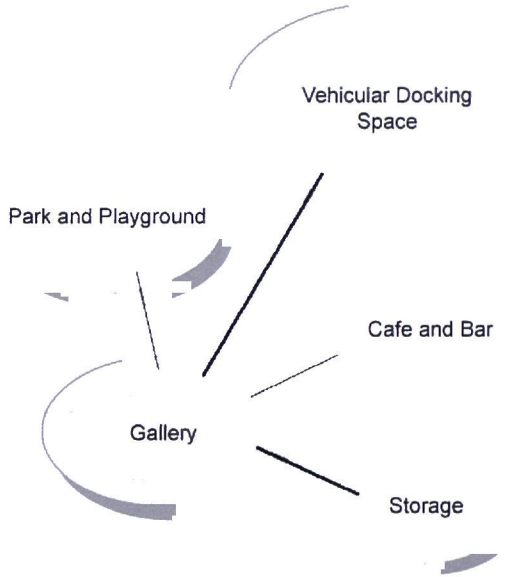
Applicable Issues: Pedestrian circulation, security, legibility

Equipment: Display partitions, graphics or sculpture on display

Adjacencies: Vehicular docking space, café and bar, park and playground, storage

Performance Requirement 1: This space should take advantage of different lighting capabilities to enhance the appearance of exhibits.

Performance Requirement 2: Aside from serving the facility's patrons arriving by automobile, this space should beacon to pedestrians on the street.



CAFÉ AND BAR (SERVED)

Activities: Dining at a table—not in an automobile, drinking and socializing

Users: Drivers and passengers of automobiles, patrons on foot

Number of Users: Not more than 40 dining, 15 at bar

Space Allocated: 2000 square feet

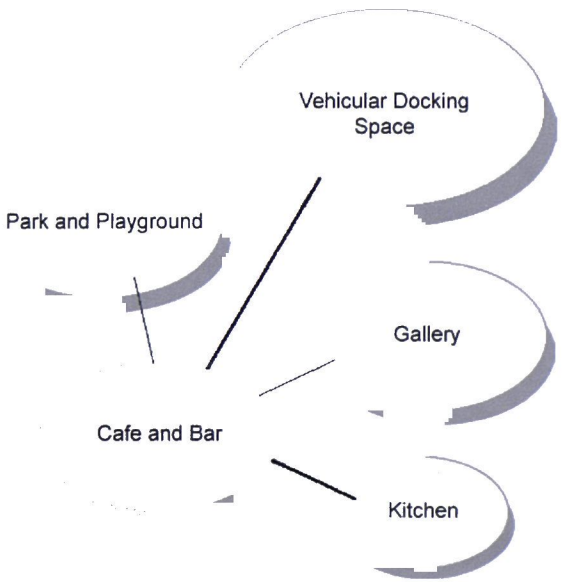
Applicable Issues: Legibility

Equipment: Tables and chairs for 40 patrons, barstools for 15, bar

Adjacencies: Vehicular docking space, gallery, park and playground, kitchen

Performance Requirement 1: Patrons dining in this space should have a variety of different views to choose from.

Performance Requirement 2: Aside from serving the facility's patrons arriving by automobile, this space should beacon to pedestrians on the street.



PARK AND PLAYGROUND SPACE (SERVED)

Activities: Children playing and adults relaxing, working, or enjoying other uses of the facility

Users: Drivers and passengers of automobiles, patrons on foot

Number of Users: Indefinite

Space Allocated: Space for playground equipment; park space is interwoven with vehicular docking space

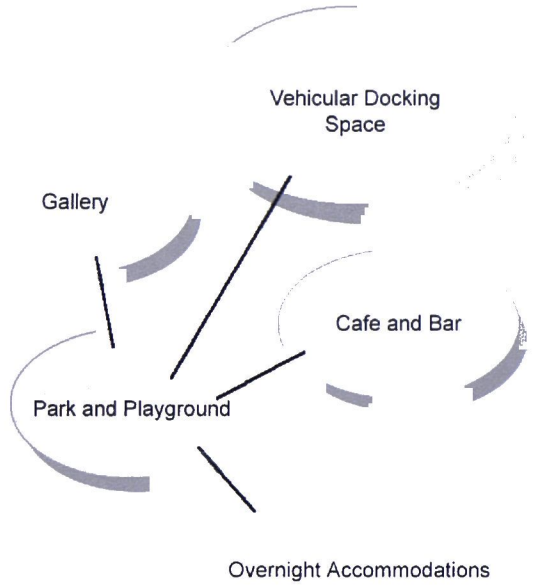
Applicable Issues: Legibility, security, safety

Equipment: Playground equipment, benches, planters

Adjacencies: Vehicular docking space, gallery, café and bar, overnight accommodations

Performance Requirement 1: A "green" environment should help patrons to relax.

Performance Requirement 2: There should be ample views to the playground equipment.



OVERNIGHT ACCOMMODATIONS (SERVED)

Activities: Sleeping, ordering food and drinks, other activities per user

Users: Drivers and passengers of automobiles

Number of Users: Varies, space for 20 automobiles

Space Allocated: 350 square feet per automobile including circulation space[22], plus 100 square feet per docking space for bathroom facilities

Applicable Issues: Circulation, safety, security, legibility, visibility

Equipment: Automobile docks

Adjacencies: Park and playground, café and bar, access office

Performance Requirement 1: There should be a high degree of privacy between docking spaces.

Performance Requirement 2: Natural ventilation should provide a comfortable climate and air filter.

Performance Requirement 3: Access should be restricted to patrons of this specific space.

STAFF BREAK ROOM (SERVICE)

Activities: Resting, basic food preparation, eating

Users: Staff

Number of Users: Not more than 6

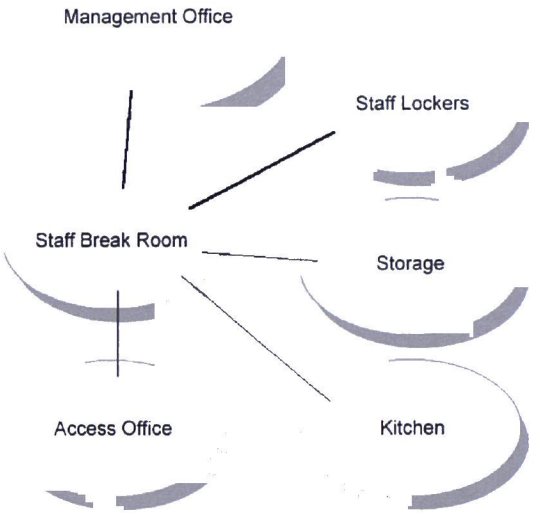
Space Allocated: 200 square feet

Applicable Issues: Security, visibility

Equipment: Small refrigerator, microwave, sink, shelving for television and/or radio, cabinets, table, six chairs

Adjacencies: Staff lockers, staff restrooms

Performance Requirement: This space should take advantage of natural daylight as much as possible to create a warm and relaxing environment for staff.



STAFF LOCKERS—MEN'S AND WOMEN'S (SERVICE)

Activities: Storing of possessions, changing into and out of uniforms or work clothing

Users: Staff

Number of Users: 10 at one time each

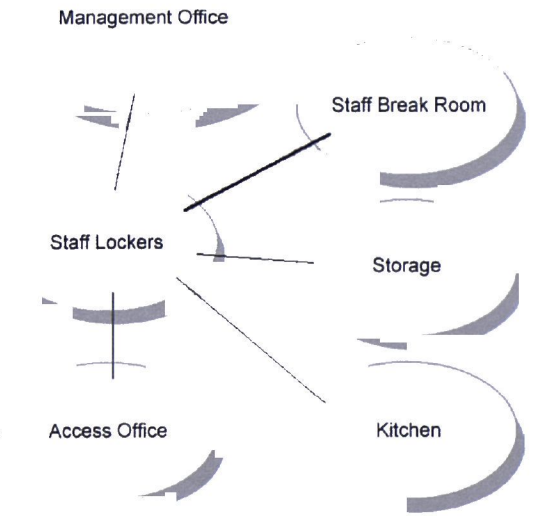
Space Allocated: 200 square feet each

Applicable Issues: Security, visibility

Equipment: 40 lockers and seating in each

Adjacencies: Staff restrooms, staff break room (likely tied directly into staff restrooms)

Performance Requirement: This space should be located near the main entrance for staff for convenient use of space upon arrival and departure.



SERVER AND TELECOMMUNICATIONS ROOM (SERVICE)

Activities: Installation and servicing of facility's telecommunications and digital information processing equipment

Users: Staff and service personnel

Number of Users: Not more than 2

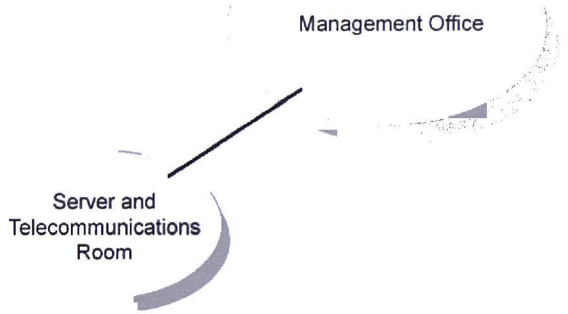
Space Allocated: 100 square feet

Applicable Issues: Security, visibility

Equipment: Telecommunications and digital information processing equipment, server to enable the local wireless network

Adjacencies: Management office

Performance Requirement: This space's location should lend to ease of distributing and integrating equipment into the rest of the facility.



KITCHEN FOR CAFÉ (SERVICE)

Activities: Cooking, preparing food, washing dishes, storing refrigerated foods

Users: Staff

Number of Users: not more than 4

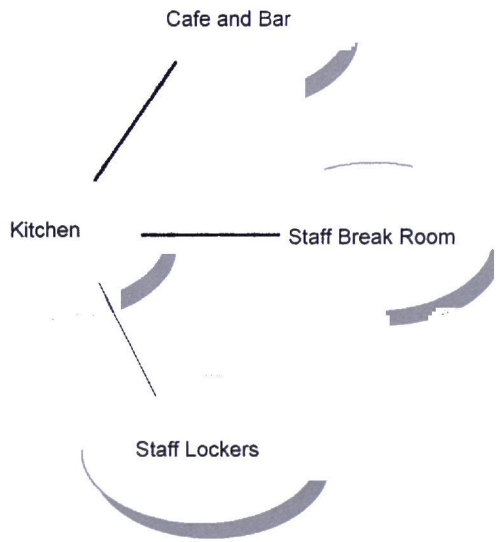
Space Allocated: 400 square feet

Applicable Issues: Security, visibility

Equipment: Wash sink, refrigerator, freezer, storage cabinets, stove, microwave

Adjacencies: Cafe and bar, staff break room, staff lockers

Performance Requirement: This space, although adjacent to the café and bar, should be blocked from view of patrons as it is a staff space.



STORAGE FOR GALLERY (SERVICE)

Activities: Storing of objects not on display

Users: Staff

Number of Users: not more than 2

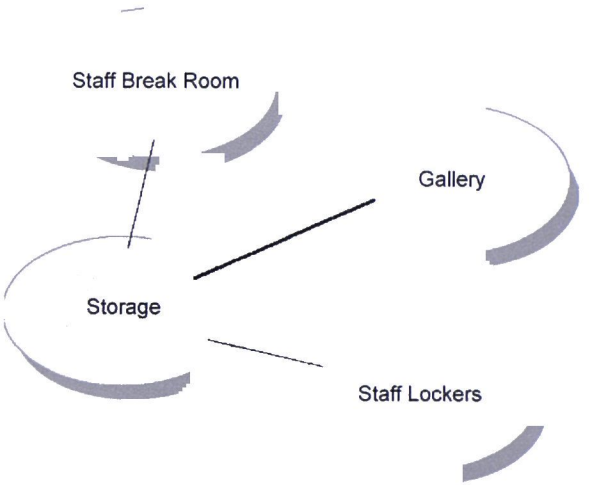
Space Allocated: 400 square feet

Applicable Issues: Security, visibility

Equipment: Shelves

Adjacencies: Gallery, staff break room, staff lockers

Performance Requirement: This space should be located out of the way of circulation in the gallery space.



MECHANICAL OPERATIONS FOR AUTOMOBILE STORAGE (SERVICE)

Activities: Operation of mechanical automobile lift

Users: Staff

Number of Users: 1

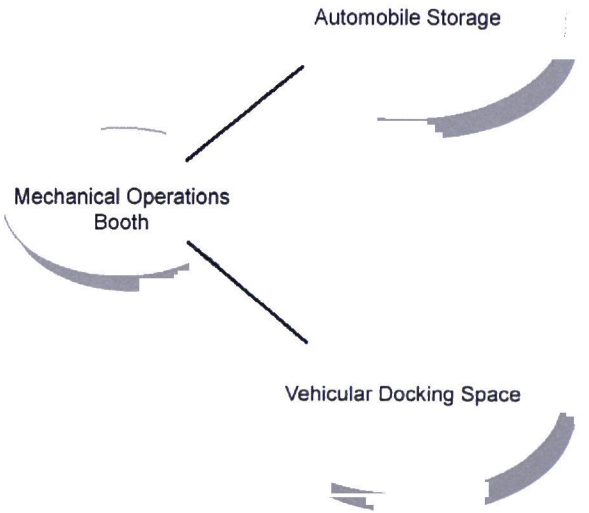
Space Allocated: 100 square feet (adequate for size of mechanical controls)

Applicable Issues: Safety, security

Equipment: Mechanical automobile lifts

Adjacencies: Automobile storage, vehicular docking space

Performance Requirement: This space should have views of facility entrance and mechanical automobile lift.



AUDIO/VISUAL OPERATIONS (SERVICE)

Activities: Controlling of digital displays by staff

Users: Staff

Number of Users: 1

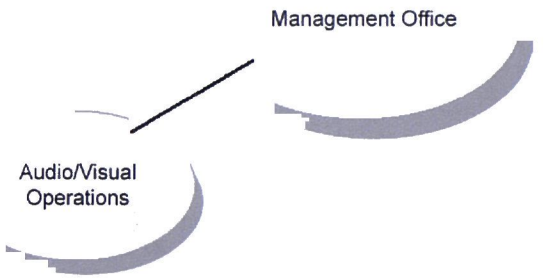
Space Allocated: 100 square feet

Applicable Issues: Security, visibility

Equipment: Digital display controls

Adjacencies: Management office

Performance Requirement: This space should have views of as many display screens in the vehicular docking space as possible.



OFFICE/ACCESS FOR OVERNIGHT ACCOMMODATIONS (SERVICE)

Activities: Monitoring access to this part of the facility

Users: Staff

Number of Users: Not more than 2

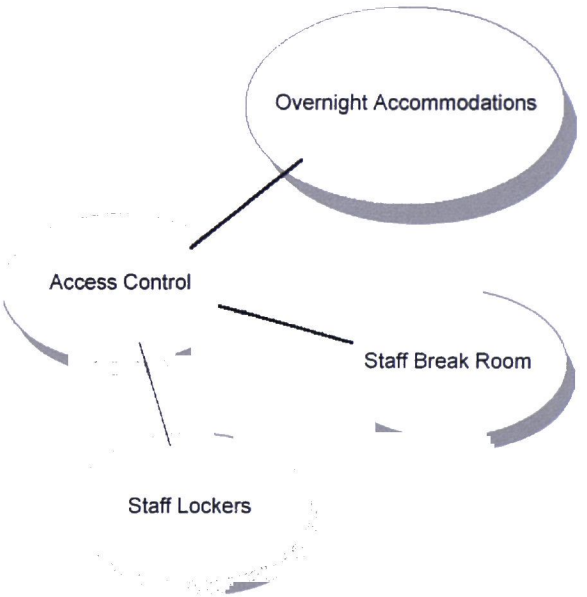
Space Allocated: 200 square feet

Applicable Issues: Safety, security, legibility, visibility

Equipment: Desk, 2 chairs, computer terminals

Adjacencies: Overnight accommodations, staff break room, staff lockers

Performance Requirement 1: This space should have full view of the circulation space in the vehicle docking area for surveillance purposes.



OFFICE SPACE (SERVICE)

Activities: Managing all staff activities taking place within the facility, viewing CCTV monitors, staff meetings

Users: Staff, security, and management

Number of Users: 20 regular users (security and management)

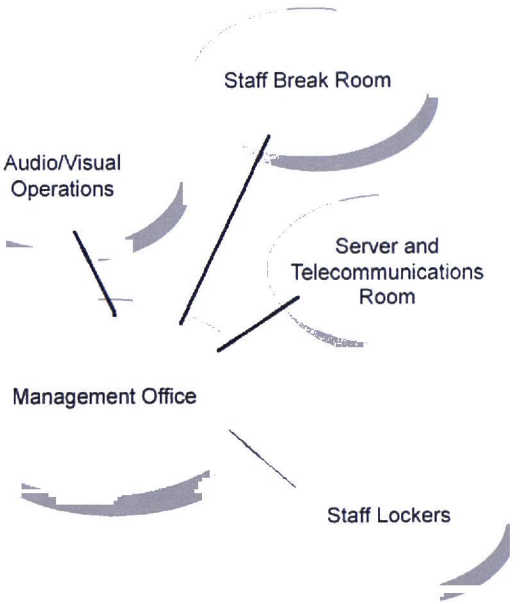
Space Allocated: 3000 square feet

Applicable Issues: Security, legibility, visibility

Equipment: 20 workstations, conference table and 20 chairs

Adjacencies: Audio/visual operations, server and telecommunications room, staff break room, staff lockers

Performance Requirement: This space should have actual views onto as many of the spaces within the facility as possible for live surveillance.



UNASSIGNABLE SPACES (SERVICE)

Staff Restrooms

Restrooms for Patrons

Mechanical/Electrical Space

Janitor's Closet

SPACE SUMMARY

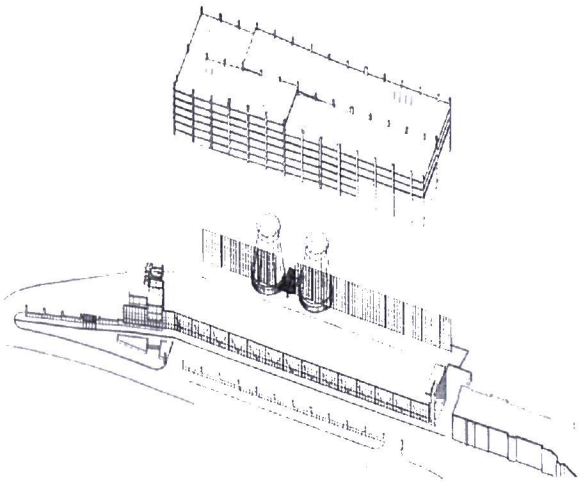
Space	Quantity	Net Square Feet	Total Net Square Feet	Number of Users
Served Spaces				
Auto Storage, no occupants	1	180/automobile[23]	64,000	400 vehicles
Vehicular Docking and Circulation	1	350/automobile[24]	70,000	200 vehicles
Gallery	1	4000	4000	50
Café and Bar	1	4000	4000	50
Park and Playground	1	Integrated[25]		dependent on vehicular docking
Overnight Accommodations	1	450/automobile[26]	22,500	50 vehicles
Service Spaces				
Staff Break Room	1	200	200	6
Staff Lockers	2	200	400	10
Server/Telecommunications	1	100	100	2
Kitchen for Cafe	1	400	400	4
Storage for Gallery	1	400	400	2
Mechanical Operations	1	100	100	1
Audio/Visual Operations	1	100	100	1
Office/Access for Overnight	1	200	200	2
Office Space	1	3000	3000	20
Net Assignable Area:			169,400[27]	
Gross Area:			282,333 (Building Efficiency Ratio: 60/40[28])	

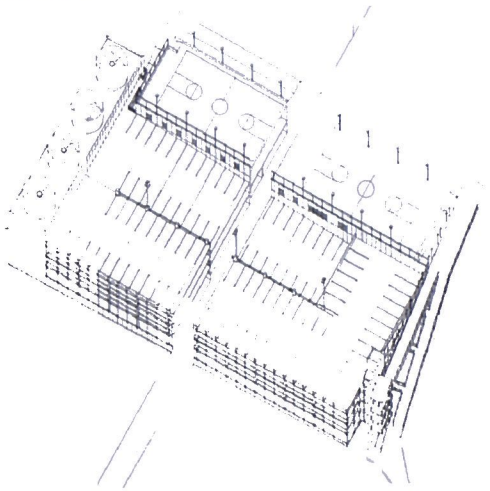
Un-assignable Areas	**Square Feet**
Circulation (20%)	56466.6
Staff Restrooms (.7%)	1976.331
Restrooms for Patrons (2%)	5646.66
Mechanical/Electrical Space (7.5%)	21174.975
Janitor's Closet (.5%)	1411.665
Unassigned Storage (.8%)	2258.664
Structural (8.5%)	23998.305
Total Un-assignable Area	112,933.2

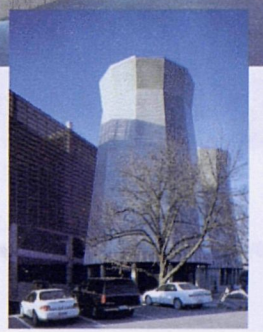
PRECEDENT STUDY 1: UNIVERSITY OF IOWA PARKING FACILITIES

Herbert Lewis Kruse Blunck Architecture
Iowa City, Iowa
2001

HLKB Architecture has established themselves as a firm well-versed in the successful architectural design of parking structures. Contributing to these successful parking solutions are the allowance of mixed-use spaces, graphics that clearly identify the facility's use and access points, and clear architectural distinction between pedestrian and vehicular vertical traffic flow. On a less obvious level, HLKB Architecture has also emphasized the horizontal movement of the automobile with carrying long horizontal lines through different types of cladding systems and exposing the horizontal structure/driving surface. The aesthetic dominance of the automobile is often filtered with translucent cladding without completely hiding its presence. Two of their University of Iowa parking structures include chilled water facilities. The North Campus parking facility's flat roof is partially utilized as basketball courts where it meets the street at the top of the hill it is built into.[29]







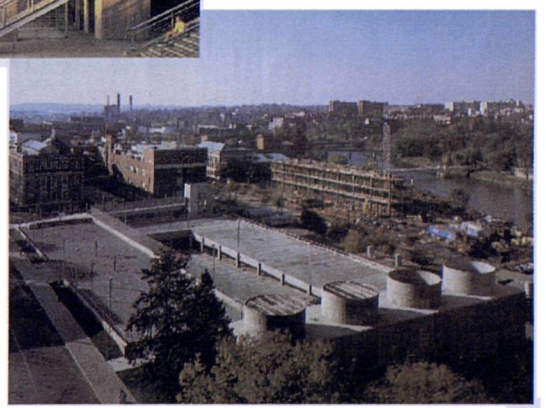


Fig. 26 (above left). Exploded axonometric, Newton Road Chilled Water and Parking Facility (*Architecture* 2/01)
Fig. 27 (above center). Axonometric, North Campus Chilled Water and Parking Facility (*Architecture* 2/01)
Fig. 28 a,b (above right). Exterior views, Newton Road Chilled Water and Parking Facility (*Architecture* 2/01)
Fig. 29 a,b (right). Exterior and aerial view of North Campus Chilled Water and Parking Facility (*Architecture* 2/01)

PRECEDENT STUDY 2: LINCOLN STREET GARAGE

Brian Healy Architects
Boston, Massachusetts
1956, renovated 2001

Brian Healy Architect's renovation to the Lincoln Street Garage in Boston successfully layers parking and several mixed uses. An Asian grocery store is located at street level with the management offices for the parking structure located on about two thirds of the second level. The remaining third of the second level and the two levels above function as open-air parking. The fifth level is leased office space. This layering of different functions assures traffic flow through the entire parking structure, as parking nearest the ground floor would be desirable for the grocery store's customers and employees of the parking company. The uppermost parking area would be most desired by employees in the office space above. Vertical pedestrian flow is also guaranteed with the need to access the fifth-level office space from street level on foot.[30]

Fig. 30 (above). Exterior view, Lincoln Street Garage (*Architecture* 2/01)
Fig. 31 (below). Exterior view (*Architecture*, 2/01)
Fig. 32 (below left). Exploded axonometric (*Architecture* 2/01)

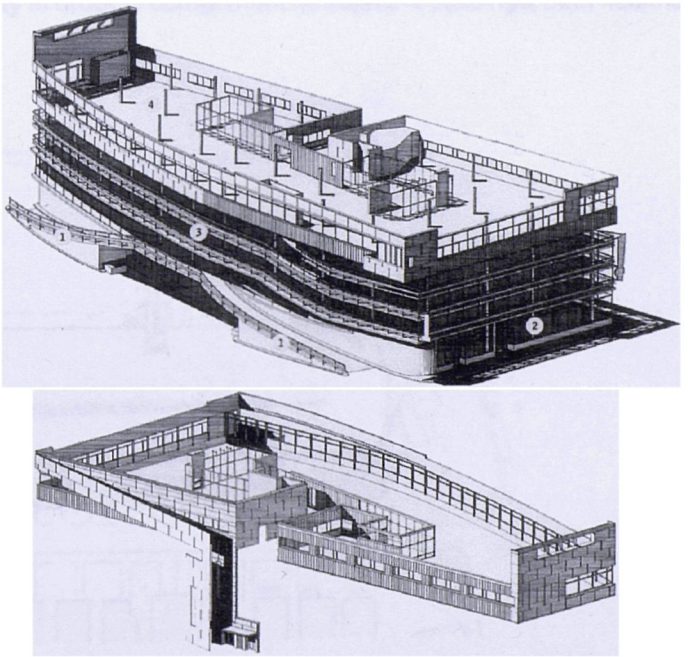


Fig. 32. Exploded Axonometric of Linocln Street Garage (*Architecture* 2/01)

Legend:

1. Automobile access ramp
2. Retail
3. Parking

PRECEDENT STUDY 3: CHILDREN'S HOSPITAL PARKING FACILITY

Ratcliff Architects
Oakland, California
1993

The Ratcliff Architects tackled the typical aesthetic issues of parking structures in their parking structure for Children's Hospital in Oakland, California. With the careful distinction of tectonic elements (namely structure and cladding), the structure's purpose can be read at first glance. The breaks in the horizontal concrete banding are filled with a metal mesh that allows the presence of parked cars to be seen. The continuation of the horizontal structure/ driving surface past the cladding system towards the pedestrian circulation tower makes the connection between the two spaces clear yet sets their purposes apart. Their approach to the building's aesthetics and architectural form was to look at the project as an urban planning problem. The building needed to take cues from its surrounding built context and lower its visual stigma as a parking facility in order to compliment its adjacent buildings, both healthcare and residential oriented.[31]

Fig. 33. Exterior view, Children's Hospital Parking Facility (*Architecture* 8/93)

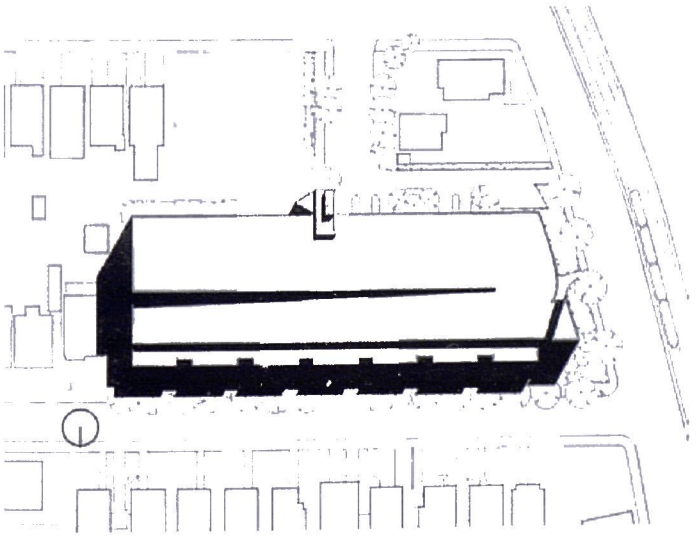
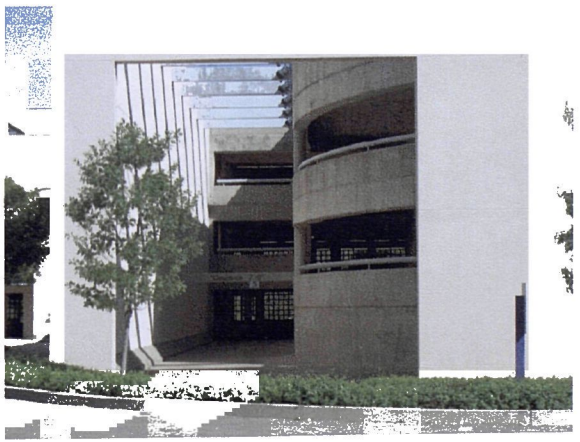


Fig. 34 (above). Exterior view (*Architecture* 8/93)
Fig. 35 (left). Site plan (*Architecture* 8/93)

PRECEDENT STUDY 4: SABRE TECHNOLOGY HEADQUARTERS

HKS, Incorporated
Westlake, Texas
2001

The Sabre Headquarters in Westlake, TX incorporates a 1,800-car parking structure[32] that wraps a surface parking lot in front of its building. A distinction between structure and cladding are used to create a layering affect here; although parked cars are not visible from all angles, breaks in the façade enable the sight of vehicular circulation. The access points to the facility are also architecturally marked in this manner. The use of hollow concrete block placed on its side allows light to penetrate to the interior of the structure, although it tends to create a visibility problem with the daytime glare of the bright natural light. This same cladding system, separate from the horizontal structural system by a distance of about six feet, also allows filtered views to the interior that are enhanced with lighting at night.[33]



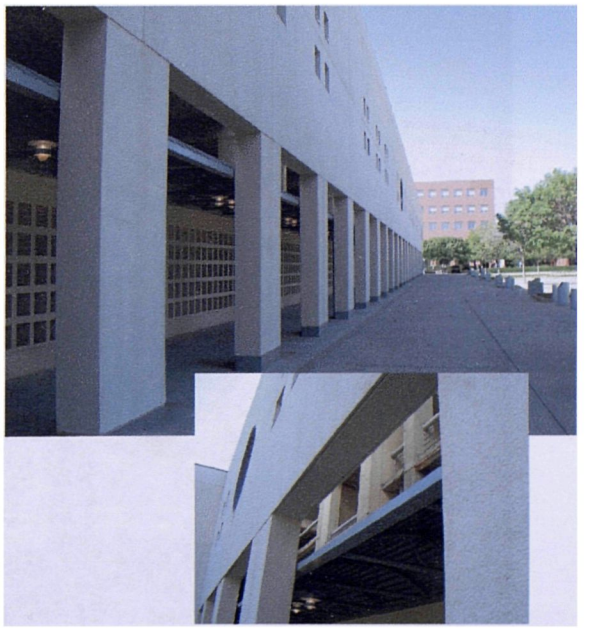


Fig. 36 (above). View of main entrance, Sabre Technology Parking Facility
Fig. 37 (above right). (a) Covered walk (b) Interior view
Fig. 38 (right). (a) Exterior view (b) Exterior detail

PRECEDENT STUDY 5: VOLKSWAGEN AUTOSTADT PARK

Henn Architects
Wolfsburg, Germany
2000

A multi-purpose environment revolves around the aura of the automobile at Volkswagen's theme park-like Autostadt in Wolfsburg, Germany. The site contains towers displaying automobiles recently off of the assembly line and a center for customers acquiring their new cars. This is where the car buying activities end though—a number of facilities remaining on the site include a movie theater, restaurants, hotel, and pavilions dedicated to each car brand of Volkswagen's. Overall, Autostadt Park is a fully functional vacation spot for the auto-enthusiast.[34]

Fig. 39 (below left). Aerial view, Autostadt Park
Fig. 40 (below). View of car towers

Notes

1. Jonathan Bell, *Carchitecture: When the Car and the City Collide* (Basel: Birkhauser, 2001), 11.
2. Marc C. Childs, *Parking Spaces* (New York: McGraw-Hill, 1999), 141.
3. Jonathan Bell, *Carchitecture: When the Car and the City Collide* (Basel: Birkhauser, 2001), 32-33.
4. Ibid., back inside cover.
5. Observation by author, December 2002.
6. Larry R. Ford, *The Spaces Between Buildings* (Baltimore: Johns Hopkins University Press, 2000), 142-143.
7. Ibid., 143.
8. Ibid.
9. Ibid., 144-145.
10. Ibid., 144-145
11. James J. Flink, *The Automobile Age* (Cambridge: The MIT Press, 1990), 155.
12. Jane Holtz Kay, "A Brief History of Parking," *Architecture* (February 2001): 77.
13. Ibid.
14. Ibid. 78
15. Jonathan Bell, *Carchitecture: When the Car and the City Collide* (Basel: Birkhauser, 2001), 87.
16. Marc C. Childs, *Parking Spaces* (New York: McGraw-Hill, 1999), 7.
17. Ibid.
18. Anthony P. Chrest., Mary S. Smith, and Sam Bhuyan, *Parking Structures: Planning, Design, Construction, Maintenance, and Repair* (New York: Van Nostrand Reinhold, 1989), 90. Mary S. Smith explains the relationship between the terms *security* and *safety* in *Parking Structures* as follows: "Security design in parking facilities deals with minimizing the risk of incidents which threaten the safety of parking patrons and parking attendants."
19. Mary S. Smith. Crime Prevention through Environmental Design in Parking Facilities, April 1996, available from http://www.nacsonline.com, accessed 20 September 2003. All of the information following this citation in the section entitled *Safety in Parking Structures* is derived from Mary S. Smith's electronic publication.
20. The American Institute of Steel Construction, Inc, "Building Tomorrow's Parking Structures Today with Steel Frames," *Architectural Record* (November 2002): 224.
21. Ibid.

22. Ibid.
23. Ibid.
24. Ibid. 350 square feet is the highest recommended planning guildeline for parking space and circulation. This number is used to compensate for circulation space and integrated park space.
25. Park space will be integrated with the vehicular docking space.
26. The American Institute of Steel Construction, Inc, "Building Tomorrow's Parking Structures Today with Steel Frames," *Architectural Record* (November 2002): 224.
27. The square footage may change during the design process as the demand of users is better understood.
28. Hershberger, Robert G. *Architectural Programming and Predesign Manager.* (New York: McGraw-Hill, 1999), 394. The building efficiency ration of 60/40 is being used to accommodate the level of service desired in a facility meant for cars *and* their drivers and passengers.
29. Anne Guiney, "Newton Road Parking and Chilled Water Facility" and "North Campus Parking and Chilled Water Facility," *Architecture* (February 2001): 98-103.
30. Elizabeth Padjen, "Lincoln Street Garage." *Architecture* (February 2001): 108-113.
31. Janice Fillip, "Neighborhood Scale," *Architecture* (August 1993): 74-77.
32. HKS Incorporated, http://www.hksinc.com, accessed 10 November 2003.
33. Observation by author, 14 October 2003.
34. Jonathan Bell, *Carchitecture: When the Car and the City Collide* (Basel: Birkhauser, 2001), 101.

CONTEXT

PROJECT LOCATION

This project is located on a parcel of land at the corner of St. Paul and Live Oak Streets in the Central Business District of Downtown Dallas, TX. The site is currently divided into several surface parking lots that lease spaces at hourly and daily rates to employees and visitors. The site is surrounded by office complexes, one of which is the Republic Center. One of the Republic Center's two towers is currently undergoing renovations to house 235 residential units with a parking ratio of 1.55 cars per unit. The second tower is currently in use as office space, and there is an architecture firm located on three of the eight floors of the portion that adjoins the two towers. All of the tenants currently park either in the surface lot located on the proposed site for this project, on one of three parking levels beneath the building, or on one of six above-grade floors within the office tower envelope recently renovated to accommodate parking. All of the Republic Center's available parking will be taken by the residential tenants when the renovation is complete.[1] This parking complication only adds to Dallas's overall need for more parking, as Main Street, a retail/restaurant district in a successful stage of redevelopment, is located only two blocks from the site.[2] There are also several vacant buildings within two blocks of the site slated for residential redevelopment.

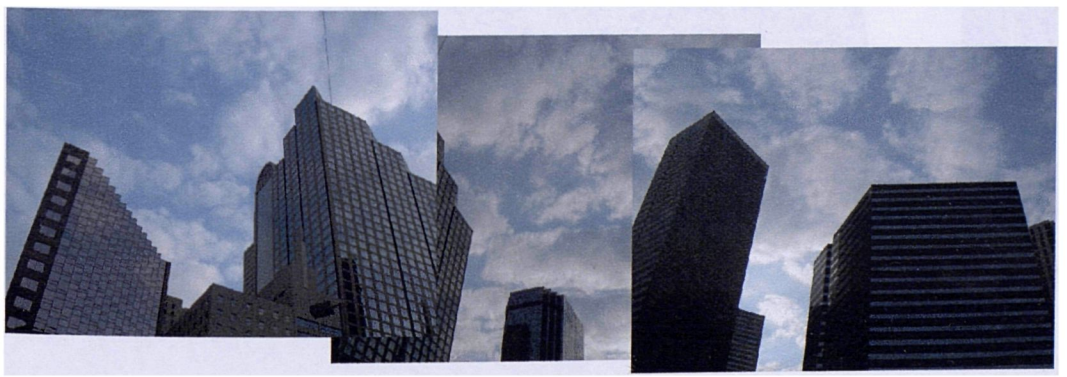


Fig. 41 (above). Spliced panoramic of view upawards from site
Fig. 42 (all images right). Assorted images, Dallas, TX

Site within the context of downtown Dallas,TX

Site within immediate context

Architectural Context

Dallas saw its beginning with the automobile, however it began growing into what it is today after World War II. Its population reached 680,000 by 1959, where it had been at only 295,000 nineteen years earlier. The city also reached an area of 300 square miles by 1959, which brought about the construction of highways to bring together different parts of the city. Along with local highways came Interstate 35 and other major roads, and the sprawling Dallas/ Fort Worth metroplex of today was then born.[3]

The modern Dallas architecture that is so dominant today began in the 1950's. The first of these buildings was the Republic National Bank tower (across the street from the proposed site for this project). This building was designed by New York architects Harrison and Abramovitz but has what became a distinctive Dallas characteristic in the repetitive sculpted star design in its aluminum curtain wall system. The president of the bank desired a replica of the Statue of Liberty on top of his building, however he settled for an awkward spire attached to the side of the tower. The actual Republic Bank and a second tower, taller than the first, were added in 1964, both copies of an earlier building in Pittsburgh by the same architects.[4] The Republic National Band complex is currently mostly vacant, with one tower slated for renovation into apartments. An architecture firm currently resides in the original banking hall.

The Southland Center (in view from the proposed site for this project) was constructed in 1958 across a plot of land that has since remained building-free. This development was among the first mixed-use complexes in Dallas, with restaurants, retail, and a hotel. Later renamed the Adam's Mark, the complex's tower is relatively bland with a grid of steel mullions and glass on two sides, and concrete slab faces on the other two.[5]

The first building of One Dallas Centre (adjacent to proposed site for this project) was built as a result of a 1976 master plan by I. M. Pei and Partners. This building is directly

Fig. 43 (top). (a) View of Republic Center towers from site, (b) View of spire
Fig. 44 (above). View of Adam's Mark from site

across the street from the Republic Center and followed in it's footsteps by adopting the same shade of cladding found on the Republic Center. This building is a diamond shape in plan with horizontal bands of tinted glass in elevation breaking up its metal curtain wall. A sense of depth is created by deep recessions that accent the otherwise plain glass and aluminum wall. These recessions ground the building at street level and are complimented by polished columns that appear to hold up most of the building near its entries.[6] The building's two main entrances are both framed in plan with courtyards currently kept in meticulous condition. A Dallas Area Rapid Transit stop now flanks one side of One Dallas Centre and the tracks continue past the Republic Center across the street.

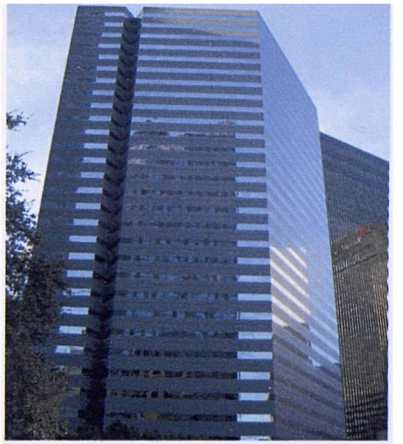


Fig. 45. One Dallas Centre

Thanksgiving Tower (across the street from the proposed site for this project), an HKS Architects attempt at copying Philip Johnson's Minneapolis IDS Center, is also across from the Republic Bank Complex. The building appears solid and unique from a distance, but is flat and dull upon close inspection. Many details that would otherwise contribute to the building's uniqueness were left off. These include corner details and depth in window mullions found in its Minneapolis predecessor.[7]

Fig. 46. View of Thanksgiving Tower from site

Across from the Republic Bank Complex on a third side is Thanksgiving Square (near the proposed site for this project). This public space, designed in the mid-1970s by Philip Johnson and John Burgee, is perhaps the only humanizing play of tectonic elements within several blocks in Dallas's Central Business District. It is composed of carefully planned plots of grass, waterworks, granite walls, and trees, with its focus as Thanksgiving Chapel.[8] The backdrop for the chapel in view from the far side of the square is Dallas's famous Republic National Bank tower. This is currently the most active public square in the Central Business District, perhaps because it is the only one designed at a human scale.

One of Dallas's most well-known skyscrapers is located within perfect view of the northeastern edge of the proposed site. Formerly known as the LTV Center, the Trammell Crow Center rises high above all else around it. It uses a vocabulary established in the earliest of skyscrapers in a modern method, which causes it to be visually distinguished from

all other buildings in the Dallas skyline.[9] SOM Houston's famous building is surrounded by some of the Arts District's finest attractions, including the recently opened Nasher Sculpture Garden design by Renzo Piano, I. M. Pei's Meyerson Symphony Center, and Edward Larrabee Barnes's Dallas Museum of Art.

About two blocks from the Republic Center is a portion of Dallas's Main Street (near the proposed site for this project) currently in a successful stage of redevelopment. A proposal by RTKL Associates involves transforming many of the historic buildings into mixed-use facilities with retail and restaurant spaces at street level, capped by office space or apartments. The plan also includes additional parking to help solve a current shortage of downtown parking. The end result of this master plan will put more pedestrian movement on downtown Dallas's streets around the clock. This will contribute to safety and overall appeal of the area, attracting more businesses and tenants and hopefully extending the redevelopment outward from its original eight-block area.[10]

Fig. 47. View of Trammell Crow tower from site

Landscape Architecture

There have been a few attempts at creating a more human-oriented environment in downtown Dallas among the gigantic corporate office towers. Although some of these attempts have failed altogether or have not had an effect on a large area, none of them should be overlooked. Their significance is part of a larger picture; using Dallas's "built-natural" environment to humanize the city.

The most significant is directly across the street from this project's proposed location. Until recently, this small triangular-shaped plot of land was a concrete median bounded on all sides by streets. A series of uniformly placed trees now stretches across the lot, breaking up a smooth granite paved surface. Creating a public square so isolated by its surrounding streets simply makes for a nice view from adjacent buildings and walkways. It is not a very pleasant place to spend time, as the low, tree-sheltered granite walls surrounding the site on its longest sides have become a popular resting place for the homeless.[11]

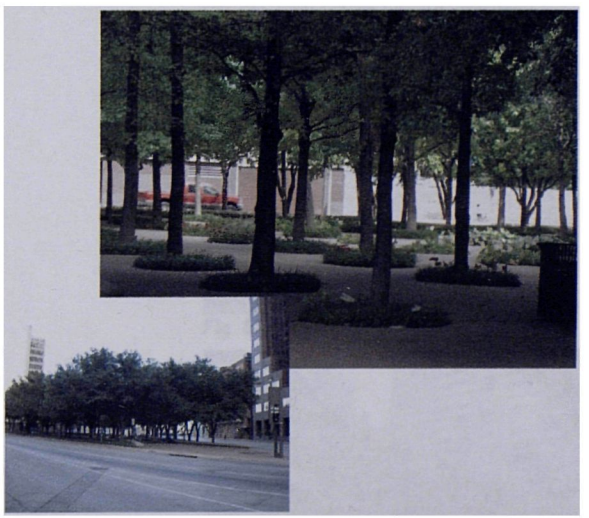


Fig. 48. Public square across from site

Directly across from this square opposite the site is a somewhat successful courtyard bordered by two buildings and the street; one building is set back about thirty feet from the other and surrounds the courtyard on two sides. There are vines running alongside the brick face of the adjacent building and trees and shrubs in planters. This is a common place for employees of the surrounding buildings to congregate.[12]

Directly adjacent to the proposed site for this project is One Dallas Centre. This building has well-maintained courtyards at each entry, although they are separated from the proposed site by a wall about eight feet tall. Employees in the building and customers of its ground level restaurant tend to congregate here.[13]

The Republic Center has added some rigid and uniform planters across from the proposed site, although they do little to help soften the building's image as currently there is nothing planted in them. There is a row of trees between the planters and the street, however the mass of the Republic Center and the shadows the building creates tend to overwhelm the presence of the trees. Employees in the Republic Center often congregate here for short breaks, but there is nothing to attract occupants for a longer time.[14]

Thanksgiving Tower, diagonally across from the site, has made an attempt to meet the ground with sufficient greenery. Despite the luscious trees and shrubs and the sunlight that they receive for the bulk of the day, the planted area is almost one full floor above street level, which leaves a solid granite wall along the sidewalk.[15]

Perhaps the most important "built-natural" aspect of the immediate area is Thanksgiving Square. This is in close proximity to the proposed site and is the Central Business District's only plaza designed at a human scale. Trees and shrubs bring a sheltering element to this slightly below-grade space and the addition of water marks the use of a natural element not used elsewhere in the area. Both the trees and water produce white noise that helps to block the sound of automobiles on the surrounding streets and DART trains on the adjacent tracks. Ample banks of grass allow people the option of resting on a soft and natural surface rather than on the typical granite walls and floors of the surrounding


Fig. 49. Courtyard


Fig. 50. One Dallas Centre courtyard


Fig. 51. Republic Center trees & planters


Fig. 52. Thanksgiving Tower green space

plazas and courtyards. At times, looking up through the natural elements in this plaza often frames smaller scale views of the surrounding buildings.[16]

Fig. 53. Thanksgiving Chapel at Thanksgiving Square

Cultural Context

Downtown Dallas has historically not supported a large permanent population. Most of its population is temporary, with a majority of the day-time occupants appearing around eight o'clock in the morning and disappearing by six o'clock in the evening. Despite this trend, recent renovation of vacant buildings into apartment housing and construction of New Urbanism-inspired apartment communities is slowly transforming downtown's residential popularity. This can be most easily quantified by looking at the 2000 census report within a one-mile radius of the proposed site for this project. About 38 percent of the residential structures in this area were built between the years 1995 and 2000. Nearly twenty percent were built before 1940, leaving the remaining 42 percent spread out over 55 years. Approximately 86 percent of the current population moved into the area between 1998 and March of 2000, showing a turnover of units with likely renovations of old factories and industrial buildings into medium to high density residential properties. This is shown with 71 percent of the 5,796 units of housing being part of a complex of twenty or more units.[17] The popularity of the idea of living downtown has continued to grow since the 2000 census report with recent new construction and renovations of residential properties.

With the existing business and commercial development, the amount of professionals calling downtown home is steadily increasing. As of 2000, about 50 percent of the residents in the area held a bachelor's degree or higher. Of the area's 10,395 residents, 35 percent of the were between the ages of 25 and 34 years, 45 percent female and 55 percent male. About 67 percent of the population is White (including eleven percent Hispanic or Latino) and about twenty percent is Black or African American.[18]

Even with its growing residential population, downtown Dallas is still predominately a temporary professional culture. This leads to a lot of movement on the streets—commuters

driving to and from their place of work, DART trains transporting local commuters, DART busses transporting commuters from distant suburbs, and pedestrians walking between destinations. This amount movement disappears after business hours though, and the streets are left only to the local residents who drive or are comfortable walking.

Crime in the immediate area of the site is of concern. Almost seven percent of individual robberies in the city of Dallas in the first eight months of 2003 occurred in the police beat in which the site is located. There were eleven murders and 50 reported rapes in the area, as well as 1091 occurrences of automobile theft, approximately ten percent of the city's total. All of the criminal offences in the site's police beat for these eight months make up thirteen percent of the entire city's total.[19]

In an effort to increase the pedestrian presence on the streets of central downtown and produce a livelier street environment, an architecture firm based in Downtown Dallas has created some basic urban design guidelines. RTKL Associates has aimed these specifically at eight blocks of downtown's main street. The guidelines allow for the addition of street furniture, lighting, and outdoor dining. Small cafés that would be open late into the evening are encouraged to occupy ground level spaces in existing buildings, and small businesses and residential units are planned for the upper levels.[20] This will contribute to the amount of eyes on the street at all hours, thereby deterring criminal activity.

Dallas has the tremendous advantage of its Arts District, only a ten minute walk from the center of the Business District. Located here are the Meyerson Symphony Center, Nasher Sculpture Garden, Dallas Museum of Art, and many other smaller galleries. Dallas brings tourists from all over the world interested in its art, architecture, and music. Plans are in the works for an auditorium for the Center for the Performing Arts by Rem Koolhas and a new Natural History Museum building by Frank Gehry.

The bulk of Dallas's nightlife is currently confined to areas other than the Arts or Business District. Entertainment and restaurants can be found in Dallas's West End which is adjacent to the Business District and opposite the Arts District. This is a haven for both

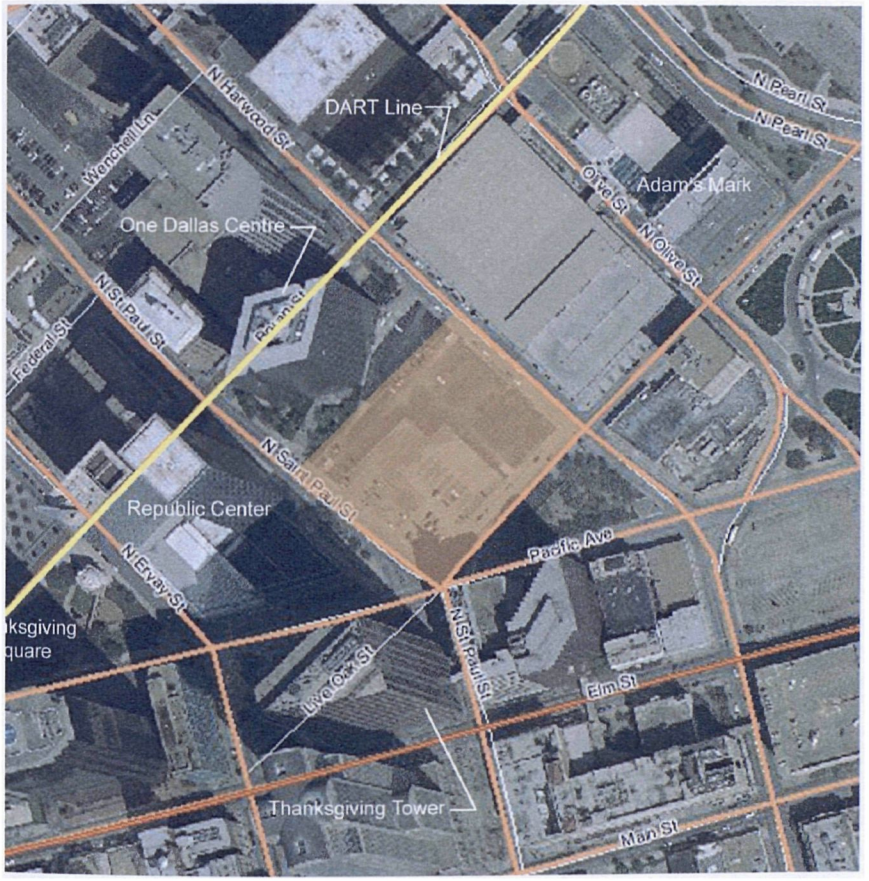
tourists and locals of all ages. Separated from the rest of downtown by an elevated highway, Dallas's Deep Ellum contains the unique night life not found in the West End and caters primarily to the younger generations. Some of Dallas's most popular clubs are located here along with numerous bars, restaurants, and even tattoo parlors.[21]

Psychological Culture

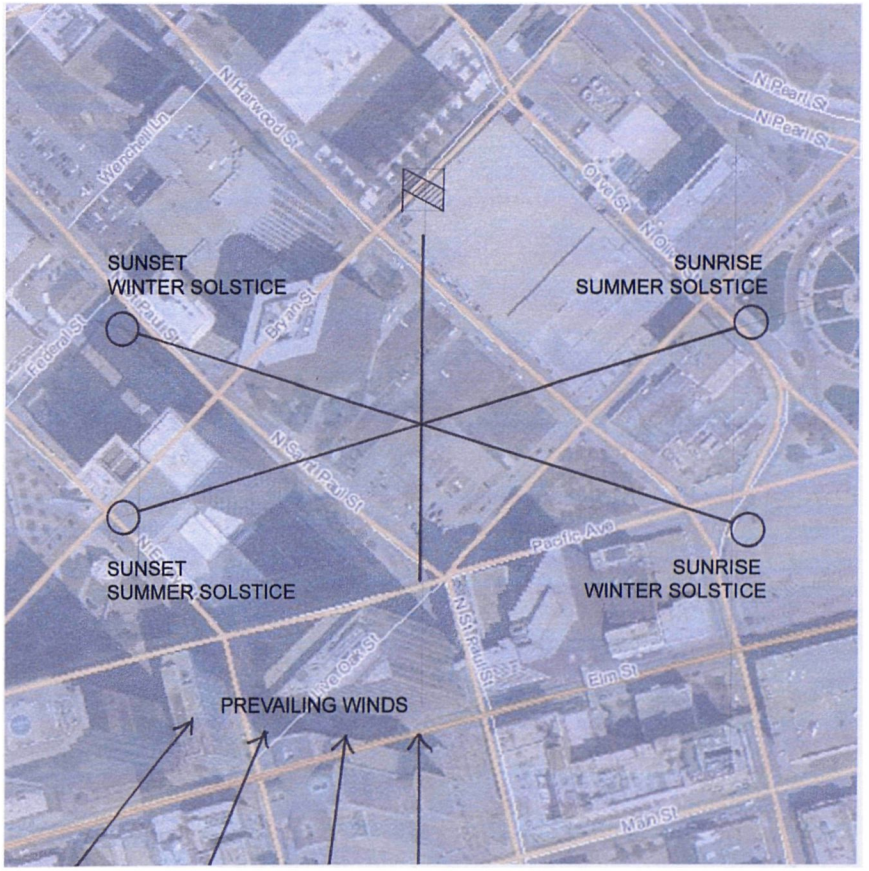
The psychological culture found in Dallas's Central Business District is one of a temporary nature. The area communicates a feeling of use to its inhabitants during business hours, as it is home to some of Dallas's busiest offices and most successful businesses. Thousands of people commute to the area simply to put in a day's work. After the consistent movement of the business day is over, the most dominant psychological presence in the Business District is one of intimidation by the success that created the skyscrapers looming overhead. One cannot ignore these metal and glass giants as one strolls or drives past at street level. Financing for some of downtown's buildings goes back to 1872, when the arrival of the Houston & Texas Central and Texas & Pacific Railroads made Dallas one of the major freight centers in the Southwest.[22] And today, with only two other cities in the nation having more Fortune 500 companies, Dallas is a huge financial and commerce center.[26]

SITE ANALYSIS

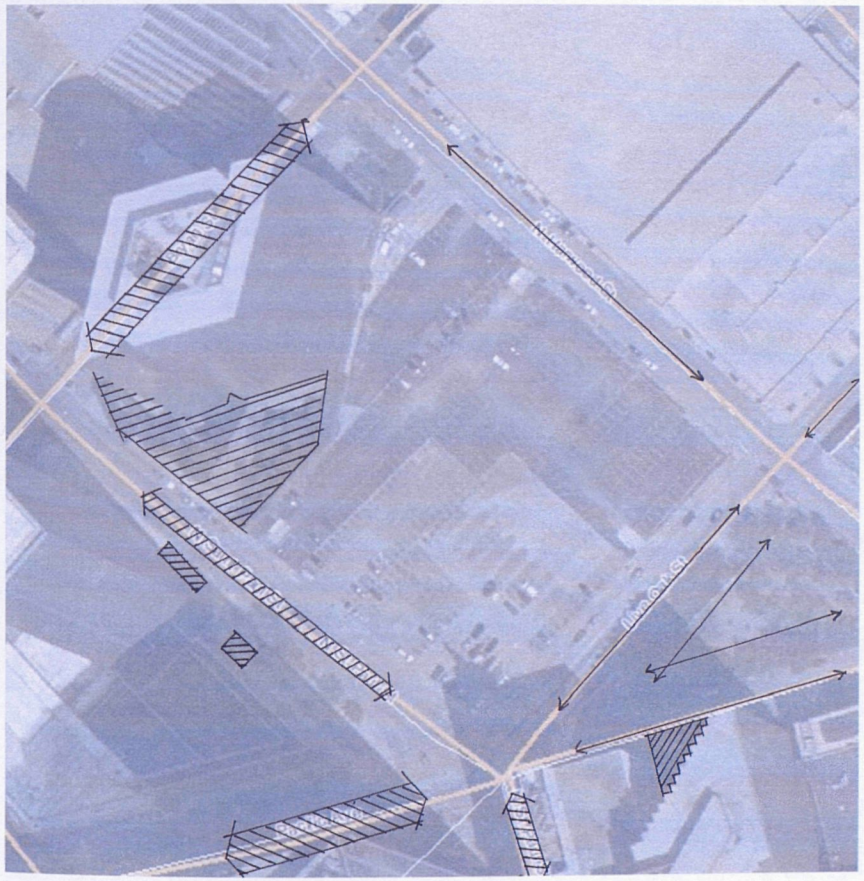
Site Overview



Sun and Wind



Pedestrian Traffic

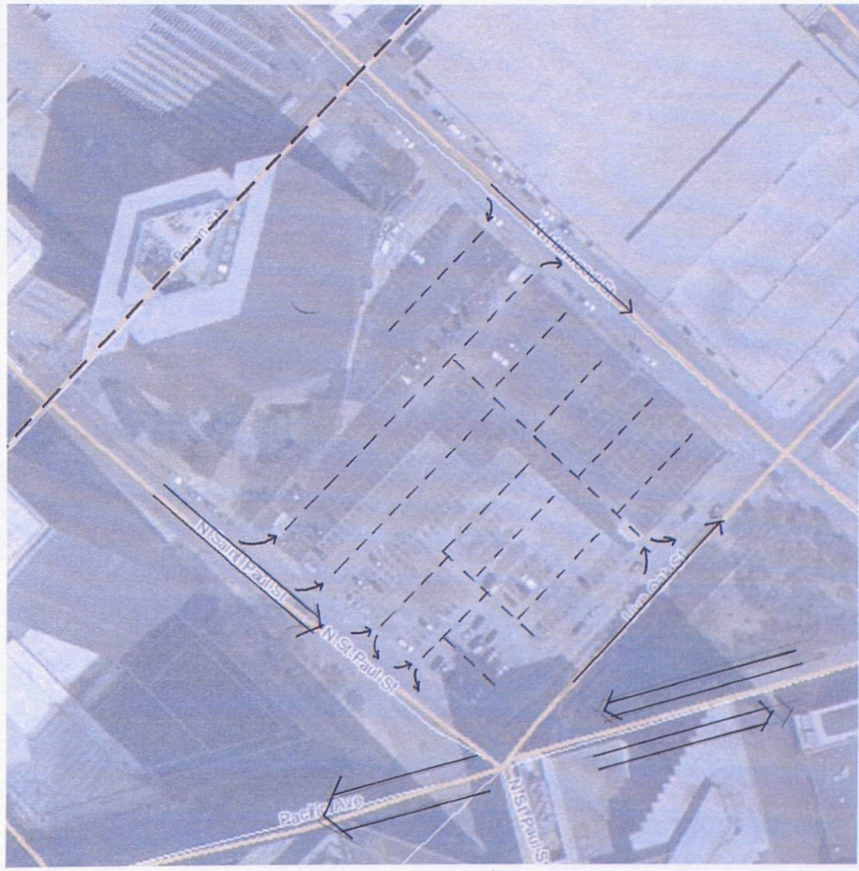


REGULAR PEDESTRIAN TRAFFIC

OCCASIONAL PEDESTRIAN TRAFFIC

GATHERING SPACE

Vehicular Traffic



HEAVY

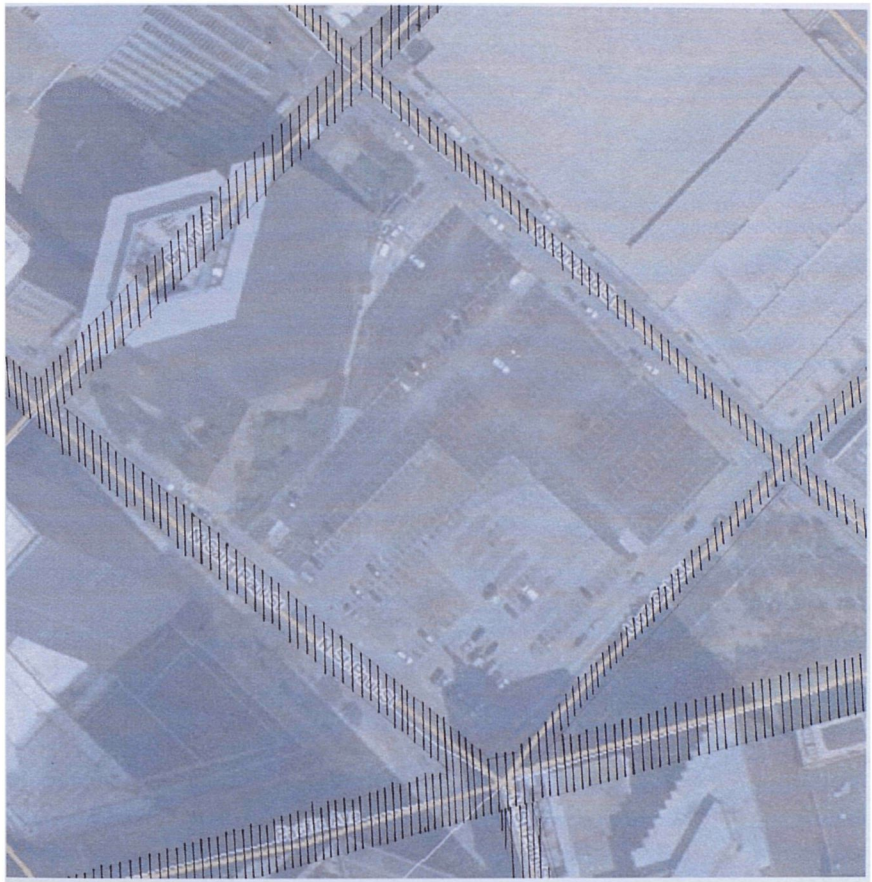
MEDIUM

LIGHT

FILTERED

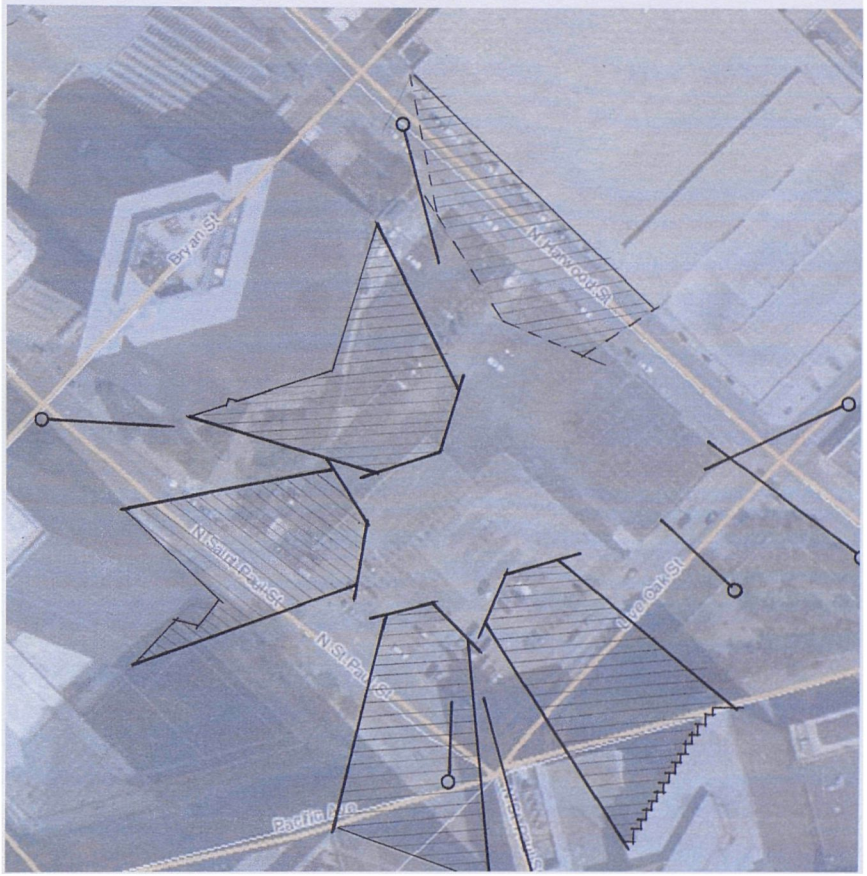
DART

Noise Levels

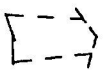


HIGH LOW

Views To Site



MAJOR

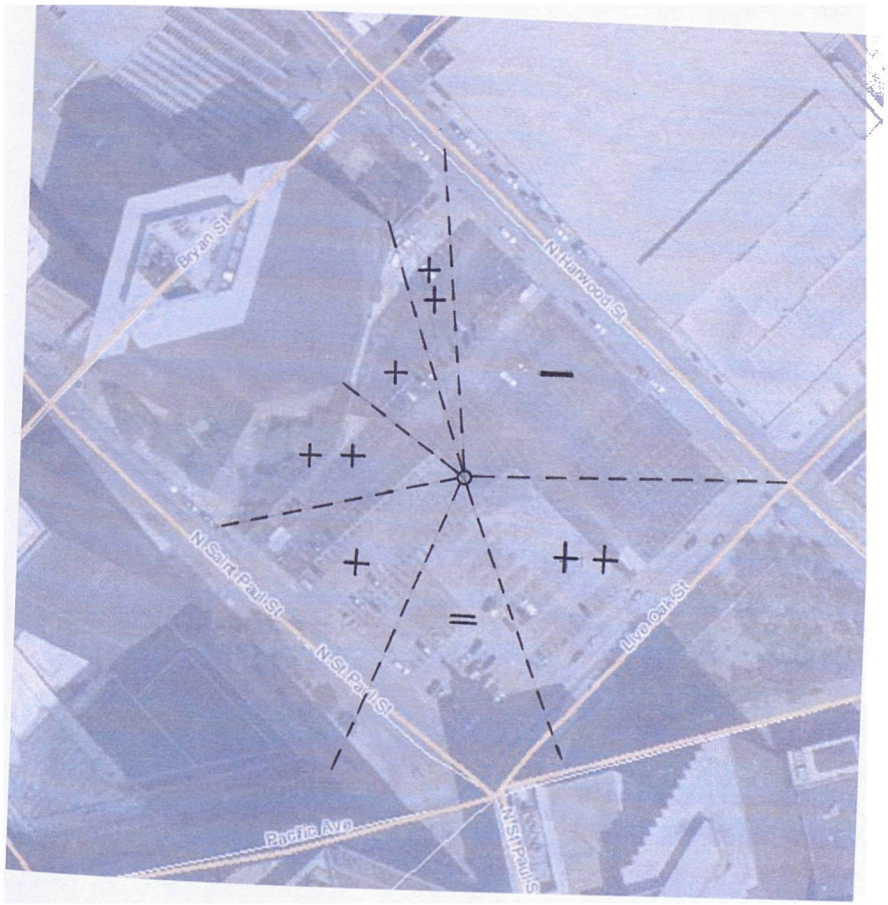


MINOR

PEDESTRIAN

CONTEXT

Views From Site

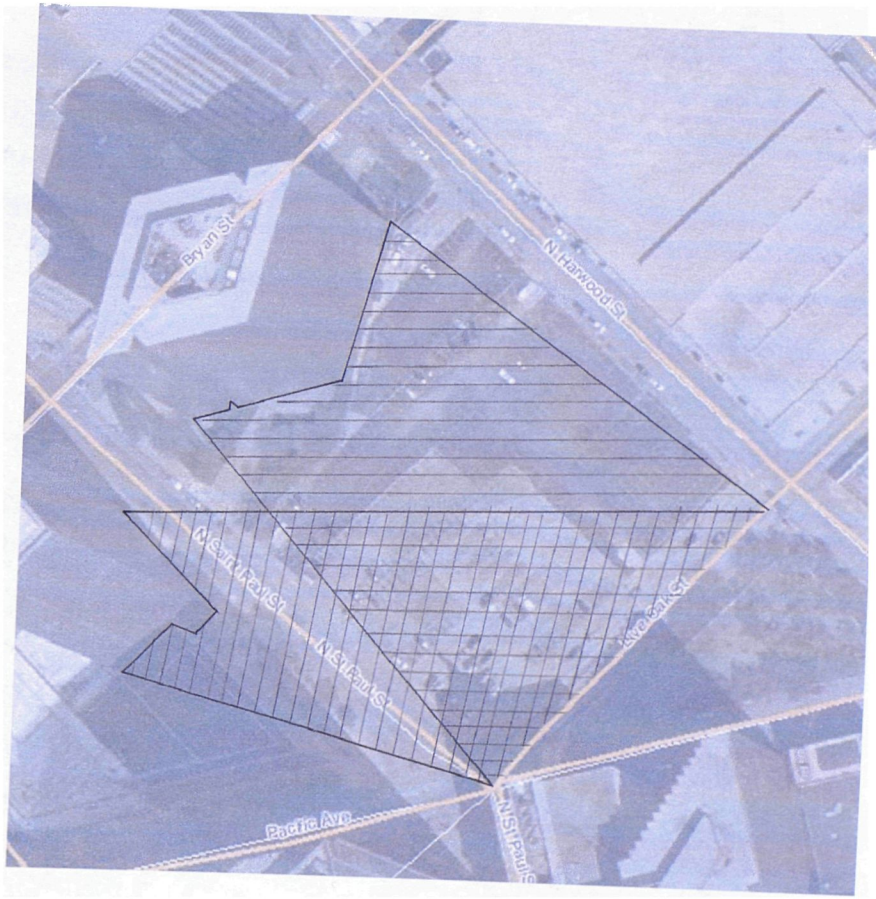


+ + + = −

GOOD

BAD

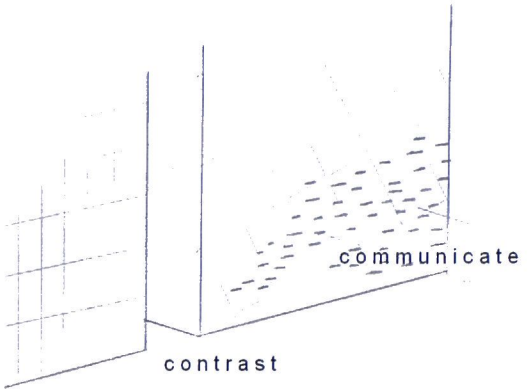
Views Through Site



ISSUE 1: IMAGE (BUILT)

Goal: The building should improve its surrounding built context by enhancing it and providing a new lens through which to view the architecture and urbanism of the Dallas Central Business District.

Design Response: The building will employ current digital technology as a way of communicating with and responding to its built context. The movement within and surrounding the building will be utilized to create images on the building itself that contrast with its surrounding built context. While shedding a contemporary light on Dallas's most serious capitalistic development, the building will become the latest lens through which to view downtown Dallas.

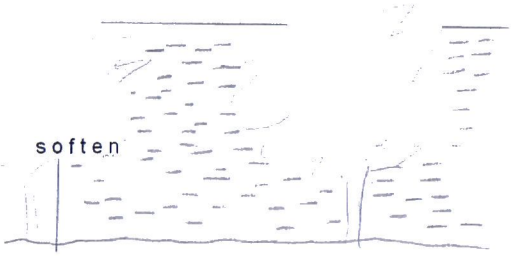


ISSUE 2: IMAGE (NATURAL)

Goal: The building should be respectful of its existing natural context.

Design Response 1: The building's scale will retain the light and open space that the current surface lot provides to the surrounding streets and buildings. The building's scale will be viewed in terms of the proportion of its individual tectonic elements rather than the scale of the building as a whole.

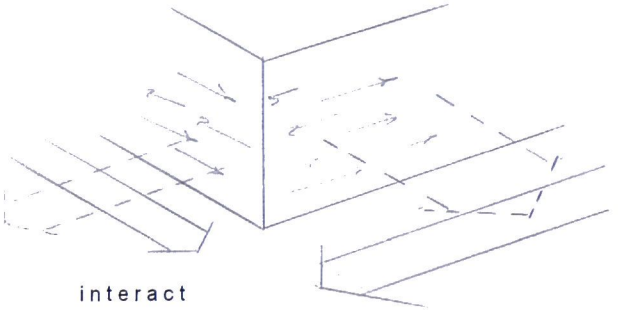
Design Response 2: The building will reflect its surrounding natural context both literally and virtually through the incorporation of natural elements into the building itself and through utilizing digital projection techniques that mirror the surrounding natural context. These elements will help to soften a building with an otherwise specifically digital aesthetic.



ISSUE 3: INTERACTION

Goal: The building should interact with its surrounding context unlike many parking structures in urban environments today.

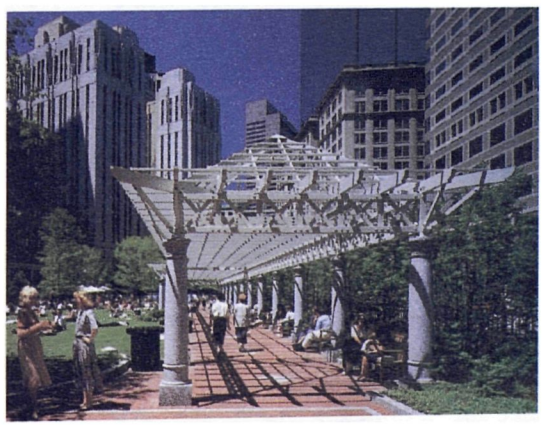
Design Response: The building will utilize digital graphic display elements in an archi*tectonic* form to communicate and interact with its surroundings.



PRECEDENT STUDY 1: POST OFFICE SQUARE

Ellenzweig Associates
Boston, MA
1995

Albeit a below-grade parking facility, Boston's Seaport Village parking garage is respectful of its surrounding built context by simply not even trying to compete in mass. Instead of replacing the original parking structure with another above-grade structure on this central downtown site, seven levels of parking beneath grade for 1,400 cars allows the space above to become a public park. With four feet of topsoil placed atop the garage, its roof was designed to hold the largest of trees and plants. A trellised pathway acts as an entrance to the park itself, while two automobile ramps, one elevator pavilion, and one stair and escalator pavilion are the only elements of the parking structure visible at street level.[24]



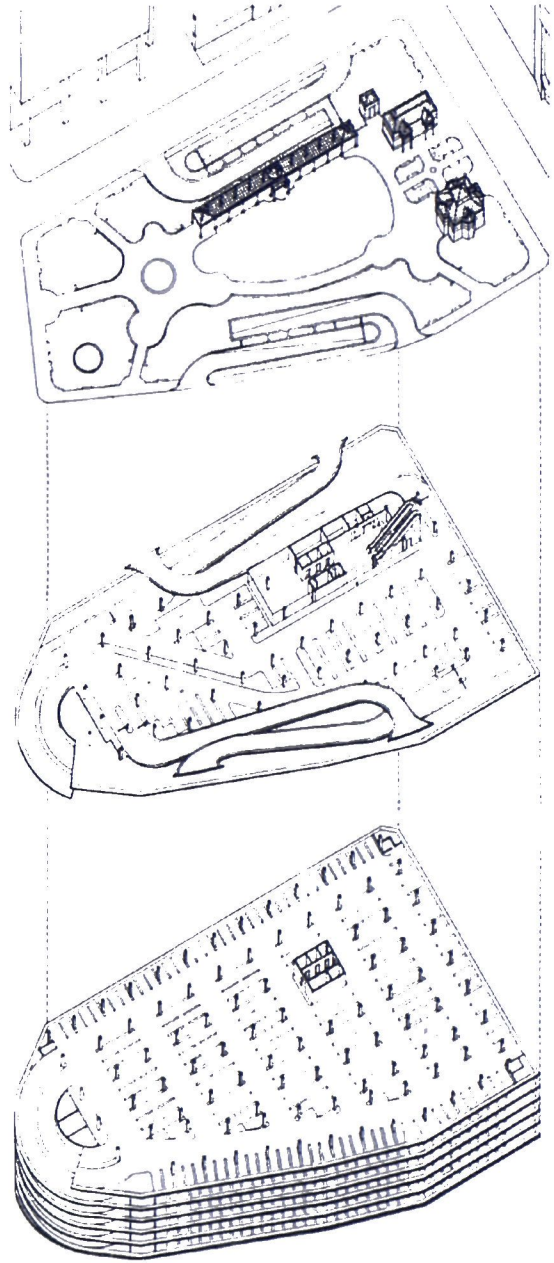


Fig. 54 (above left). Aerial view, Post Office Square (*Architecture* 8/93)
Fig. 55 (above center). View of trellised entrance (*Architecture* 8/93)
Fig. 56 (right). Exploded axonometric (*Arhitecture* 8/93)

PRECEDENT STUDY 2: SOLANA BUSINESS PARK

Legorreta + Legorreta Architects
Westlake, Texas
1988

This parking structure, although not a multi-level structure, integrates its natural context directly into its design. Vines that are common elsewhere in the Westlake, Texas, Solana Business Park are used as sheltering and shading elements that become the cladding lying directly on top of the simple post and beam structural system. While respecting the tremendous natural context found at the Solana Business Park, Architect Ricardo Legorreta has set his buildings apart from their natural backdrop with a vivid color palette. Brick pavers and a feeling of shelter yet openness contribute to the very sensual pedestrian experience in this parking structure.[25]

Fig. 58. View from entrance

Fig 57. Interior view of Solana parking structure

Fig 59. (a) Roof detail (b) Signage detail

PRECEDENT STUDY 3: PHOENIX CENTRAL LIBRARY

Bruder DWL Architects
Phoenix, Arizona
1995

Phoenix's Central Library responds to the cultural and built contexts within which it was placed in many different ways. Of particular importance here is the library's ability to communicate with its surroundings. This is done through a type of *intermittent transparency* that allows views into the building through louvers and mullions. One can view the rhythm created by the bookcases and understand the activities taking place within from both street level the adjacent elevated highway.[26] With the aid of its transparency, Bruder's library acts as an icon for itself to the city—no great big sign is necessary to convey what it is, but it fits well within its built context while pleasantly enhancing it with its materials and color.

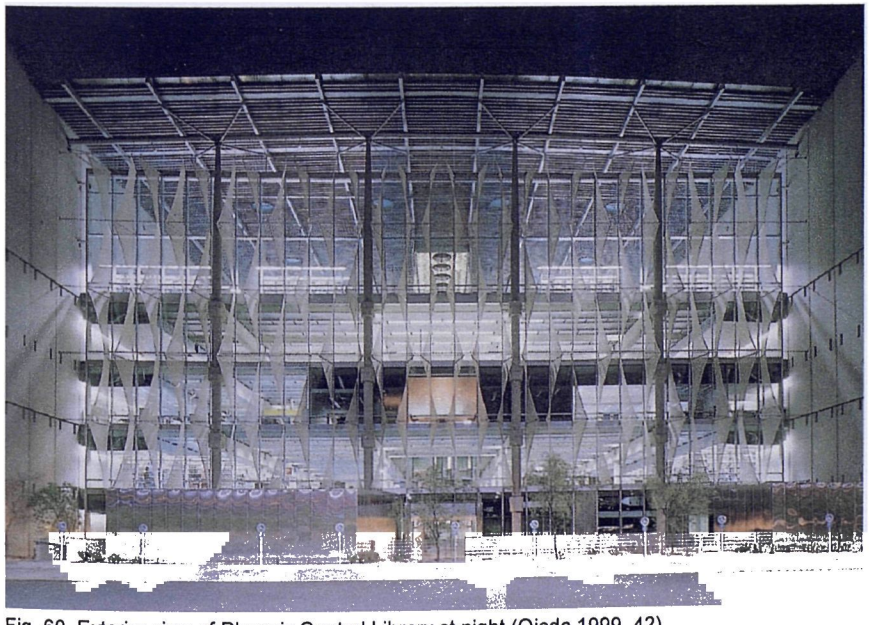


Fig. 60. Exterior view of Phoenix Central Library at night (Ojeda 1999, 42)

Fig. 61. Exterior view of Phoenix Central Library at dusk (Ojeda 1999, 114)

PRECEDENT STUDY 4: LEHMAN BROTHERS HEADQUARTERS

Kohn Pedersen Fox
New York, New York
2002

The Lehman Brothers Headquarters fulfills its Times Square signage requirement with the large LED screens wrapping its façade in between strips of windows. The otherwise bland and static façade is brought to life with the images portrayed on its screens. Artkraft Strauss Company created the sign originally, but Imaginary Forces actually designed the award-winning display that can be seen today. The innovative sign allows the building to become engaged in the movement of its surroundings, occasionally reciprocating it and sometimes displaying images of storms or other built objects such as bridges. Through this, the building itself becomes a type of captivating animated digital art.[27]

Fig. 62. Lehman Brothers building with screens lit up (photographs courtesy Catherine Galley)

Fig. 63. Building with screens turned off

Fig. 64 (above), 65 (below). Building with screens lit up

Notes

1. Gerry Renaud, Associate Vice President, RTKL Associates, Inc, Interview by author, 23 September 2003, Dallas, written record, Office of RTKL Associates.
2. RTKL Associates, Inc, Downtown, Electronic presentation document (2003).
3. David Dillon, *Dallas Architecture 1936-1986* (Austin: Texas Monthly Press, Inc., 1985), 31.
4. Ibid., 35-36.
5. Ibid., 39.
6. Ibid., 112.
7. Ibid., 162
8. Ibid., 164
9. Ibid., 159-160
10. RTKL Associates, Inc, Downtown, Electronic presentation document (2003).
11. Observation by author, October 2003.
12. Ibid.
13. Ibid.
14. Observation by author, September 2003
15. Ibid.
16. Observation by author, July 2003
17. 2000 Census Report, available from http://census.dfwinfo.com, accessed 4 November 2003.
18. Ibid.
19. City of Dallas Police Department Crime Statistics, available from http://www.ci.dallas.tx.us/dpd/cgi-bin/stat.pl, accessed 17 October 2003.
20. RTKL Associates, Inc, Downtown, Electronic presentation document (2003).
21. Observation by author, summer 2003.
22. Jim Donovan, *Dallas: Shining Star of Texas* (Stillwater, MN: Voyageur Press, Inc., 1994), 20.
23. Ibid., 26.
24. Donald Albrecht, "Garden Masquerade," *Architecture* (August 1993): 78-81.
25. Observation by author, 14 October 2003.
26. Oscar Riera Ojeda, ed, *Phoenix Central Library*, with an introduction by Nader Tehrani (Gloucester, MA: Rockport Publishers, 1999).
27. Catherine C. Galley, "A Moveable Feast: Times Square and the Emergence of a New Paradigm," *2003 ACSA Annual Proceedings* (Washington, DC: 2003), 3-5.

DESIGN RESPONSE

DESIGN PROCESS

This project's design process initially began with the programming effort earlier in this document. Throughout the programming stage, ideas began to form pertaining to building form and general spatial organization. However, it was not until schematic design that those ideas could be legitimately tested with professors and fellow students. The term "fellow students" is instrumental here—students learn not only from their professors, but pick up a tremendous amount of knowledge from their peers as well.

The schematic design portion of this project consisted of three schemes, each seen on the following pages. Each scheme is completely different in its design intent, and each has advantages that the other two lack. Of the three schemes, two are somewhat conservative in their treatment of the typical parking structure, while the third questions almost every aspect of it as originally intended and demonstrated earlier in this program.

Interesting in the design of a facility used so commonly by people that they barely think of it is what these people actually do think of that facility when asked. During the schematic design phase, a survey—*An Automotive Culture* (see appendix A)—was given mostly via the internet and partially in writing. This survey included questions on the use of automobiles and on experiences in parking structures or surface lots. With a total of 68 respondents, the survey yielded some interesting results that impacted the outcome of this project.

Following the schematic design process was an attempt at another scheme. This scheme took applicable ideas from the preliminary review but was an entirely different answer to this project than any of the three previous schemes.

Ideas from the preliminary scheme (scheme four) were again applied to the next scheme. The original intent of the project, to question almost every aspect of existing parking structures, slightly disappeared in pursuit of the efficiency required in a parking structure. Scheme five (specifically for the qualifying review) set the template for the final design

proposal but still needed further development to stand on its own. That development occurred during the month following the qualifying critique and lead to the final form of the building.

Despite using the term "final design proposal," this project, even in its most completed state, is part of a process. I do plan to continue investigating possibilities. Parking structures to me are some of the most interesting buildings we have—they accommodate some of the most technologically advanced industrial design objects in existence—automobiles, which will forever change to accommodate their drivers. Aside from this, parking structures *should also* accommodate the pedestrian without an automobile, as these are buildings we experience both behind the wheel *and* on foot.

DESIGN RESPONSE

The final proposed design for this project does not question the volumetric form of parking structures, so the great difference between this facility and a typical parking structure is not readily apparent. However, details are what have changed, or emerged, in the transition from the design of a typical parking structure to the building proposed herein.

Responding to Theory

As discussed in the theory section of this program, function is not necessarily related to form, and therefore building type is not defined by form. One could argue that the form of this parking structure is similar to any other (thereby defeating the previous statement), but I would counteract that argument with stating that this parking structure's function has changed and adapted to the needs of the modern driver. The changing function within the fairly static form proves the lack of relationship between building function and form, thereby proving that building type and form are not necessarily related.

Further supported by the earlier theory section, there are basic elements that relate similar building types. Through this design process, one prevalent element in parking structures is the strong presence of horizontality. This is bought on by the need for heavy horizontal surfaces on which to park. By default for the advantage of airflow, these slabs are visible because of the voids between them that open up the parking decks.

The idea that this parking structure will accommodate all who choose to work in their automobiles carried through the entire design process. There are spaces linked to each parking deck that provide the necessities that automobiles cannot—a conference room, a resource room with printing equipment, and a lounge. These spaces impact the facades of the facility and become visible elements of this new building type and a part of its digital aesthetic.

Responding to Issues

As set forth in the issues defined in the theory section of this program, an *intermittent transparent state* is used to reveal the building's use as a place of automobile storage. The cladding elements on the building relate to its function, as they allow views of circulation spaces and views of the interior core of the structure. The structure and the cladding are distinctly different architectonic elements in this building with a visual hierarchy of their own. Movement within the structure is revealed on the exterior between cladding elements, and the balance of parking spaces verses median-like spaces and cross-walks contributes to an environment of contentment within the facility that counteracts the movement of the traveling automobile.

The building's spatial organization changed drastically from the original programmed spaces. The gallery and café became less integrated with the parking space; the overnight accommodations disappeared in favor of an environment welcoming workers anytime of the day or night; and the automobile storage space became part of the general parking space in favor of enhancing natural surveillance of all parking areas. The term "Vehicular Docking Space" should be further defined as a parking space with a virtual dock—the ability to wirelessly connect to the internet, as there is no physical dock needed for this. The only physical connection needed might be for power supply. The park-like environment was brought to life with terraces on the interior of the parking decks, with the idea of the playground becoming part of the proposed recreational space on the top floors of the facility.

As per the issues defined in the facility section of this program, vehicular circulation and pedestrian circulation are kept perceptually separate with the use of median- and sidewalk-like spaces. These exist on the interior and exterior of the parking decks and are connected via cross-walks. Pedestrian safety in a traditionally vehicle-oriented facility is emphasized with this. The exploration of graphic elements clarifying circulation paths was not explored as much as originally intended, but graphic elements are a necessary part of the wayfinding system in this building. Building security is enhanced particularly with the incorporation of

the mixed-use parking which leads to natural surveillance. The perception of security is harbored in basic solutions such as more-than-adequate lighting and clear views across parking decks.

Addressing the issues listed in the context section of this program, this parking structure does shed a contemporary light on Dallas's architectural seriousness with its use of cladding elements and proposed use of digital panels on the exterior. These digital panels would increase the building's virtual interaction with its surrounding context. The building remains respectful of its existing natural context, as it incorporates natural cladding to soften its image and to relate to the surrounding green spaces.

SCHEMATIC REVIEW: SCHEME 0

Scheme 0 is documentation of applicable process and ideas prior to the schematic reviews. The photograph of the parking structure downtown Dallas with a color overlay shows how the programmed spaces could be inserted into an existing parking structure. The color diagrams represent different spatial arrangement options, and the images to on the right side of the layout are taken directly from the case studies in this program.

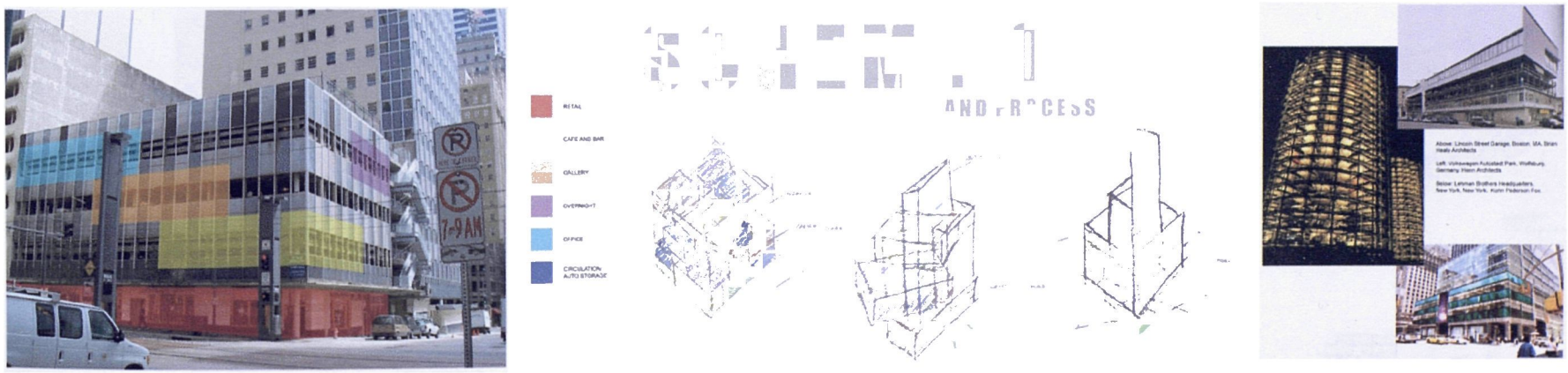


Fig. 66. Scheme 0 layout from schematic presentation

SCHEMATIC REVIEW: SCHEME 1

Scheme one is an exploration of the parking structure as a flow downwards toward the adjacent grove of trees. The main idea in this scheme is that the building can become both a part of the grove and a focal point from it. Digital projection toward the grove is therefore an option in this scheme, and natural cladding would be used to soften the building's image. Vertical circulation is completely a ramp system. The main criticism of this scheme is that, despite its layered form, it is simply too much like a typical parking structure.

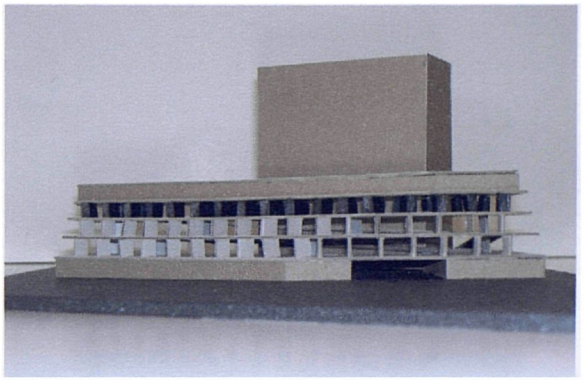


Fig. 67. Scheme 1 model, view from adjacent grove.

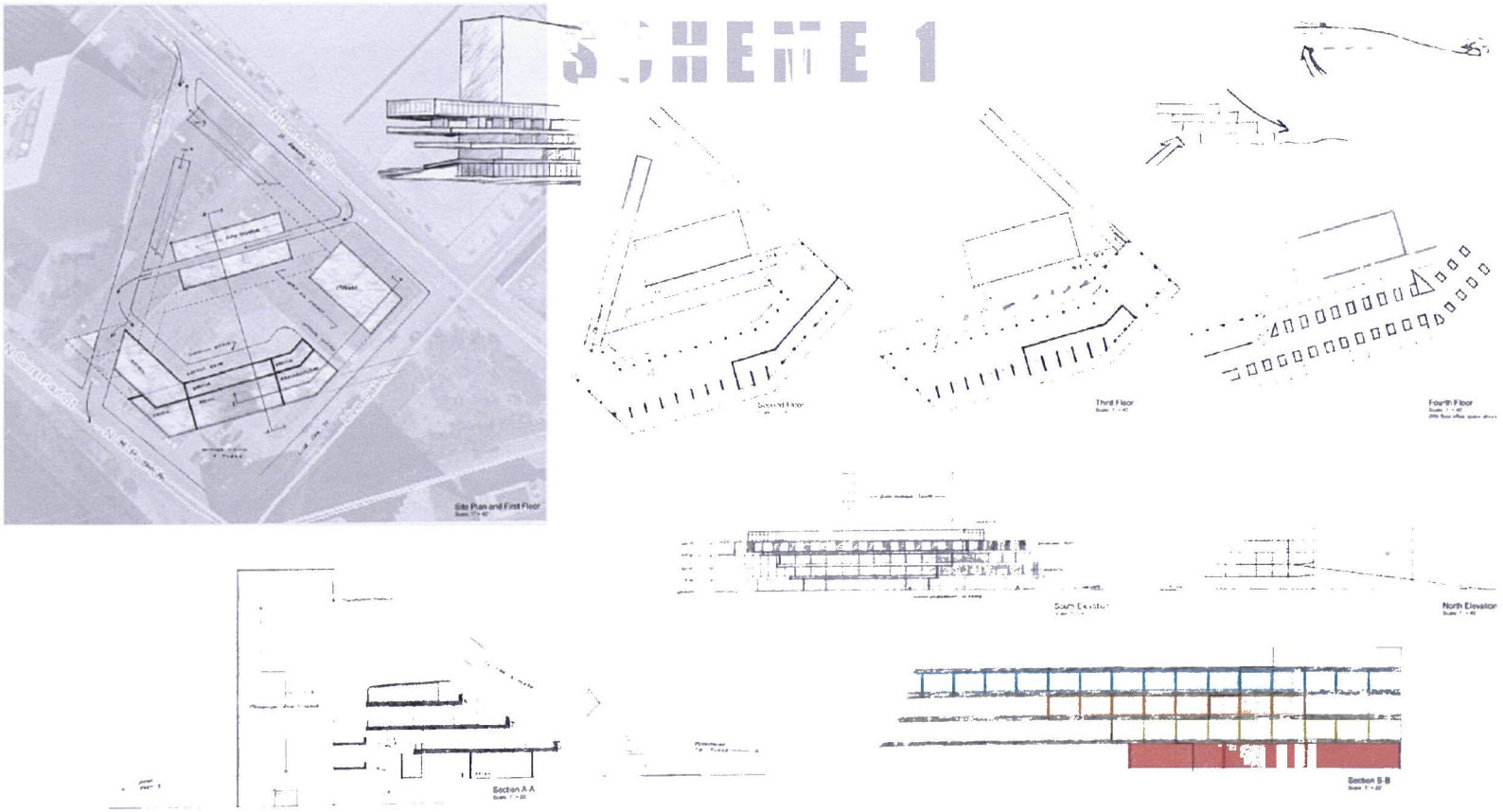


Fig. 68. Scheme 1 layout from schematic presentation

SCHEMATIC REVIEW: SCHEME 2

Scheme two is a spatial exploration concentrating on centering all functions of the parking structure on a main automobile storage tower. This tower would also become the center from which all building services would happen. This scheme, over the previous two, has the most capability to compete with its surrounding buildings in vertical scale, as the pinwheel parking decks surrounding the core can continue upwards as much as desired. Vertical circulation is mechanical. The main criticism of this scheme is, again, that it is simply too much like a typical parking structure.

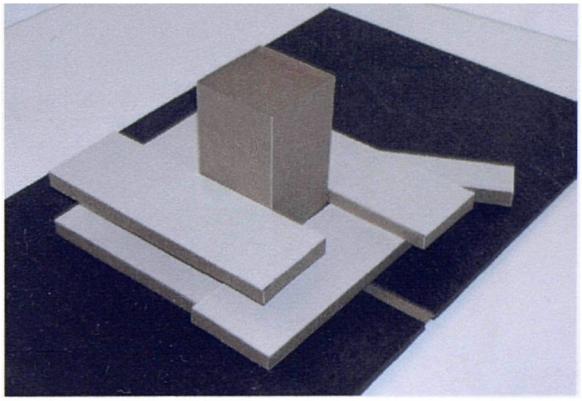


Fig. 69. Scheme 2 model, east aerial view

Fig. 70. Scheme 2 layout from schematic presentation

SCHEMATIC REVIEW: SCHEME 3

Scheme three is the most liberal of all the schematic schemes in its spatial organization. The typical similar layout and orientation of all parking decks is eliminated in favor of creating an individual type of experience on each level of the structure. The automobile storage tower and the structure's service spaces are located along the northeast border of the site. The vertical circulation between parking decks also takes place in this space. There is retail located along Live Oak Street, and the structure is, at this point, conceptually connected to the grove across Live Oak Street. Ideally, trees would be cleared to create an open plaza for food and merchandise vendors.

This scheme was criticized for not being completely thought out—ex: what happens beneath the parking decks and behind the retail. The building form, although interesting, does not follow the existing street grid and creates many questionable spaces around corners for the possibility of crime. Of the three schemes, this scheme has the most confusing circulation system in that the point of entry and point of exit are located in the same place. To compound this, the form of the parking decks does not allow fluid circulation from entry to exit. Overall, this scheme warranted further exploration and an investigation into how to fix its problems.

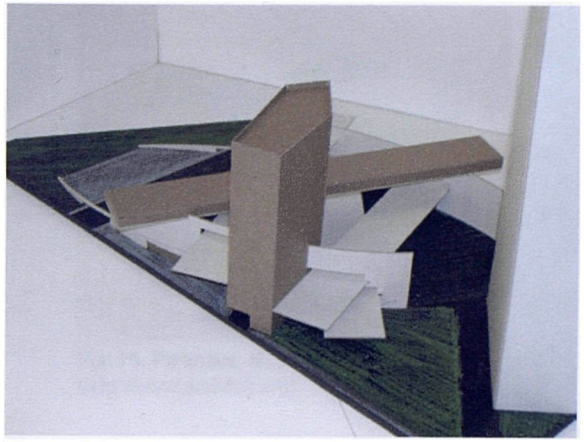


Fig. 71. Scheme 3 model, north aerial view

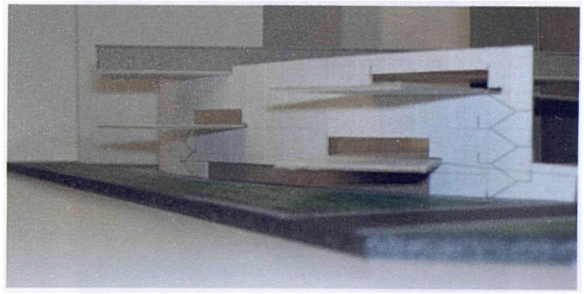


Fig. 72. Scheme 3 model, south view from street level

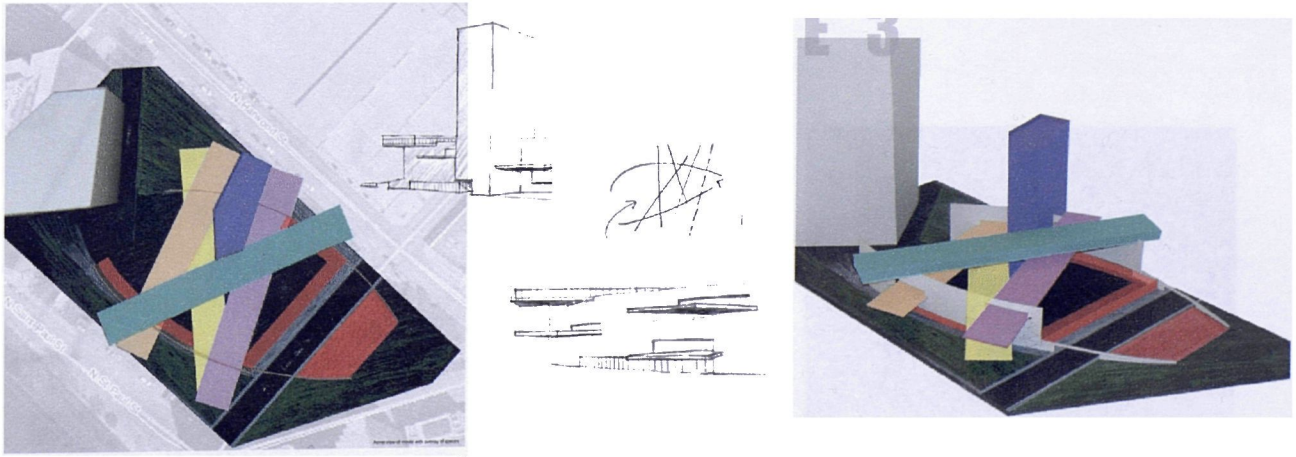


Fig. 73. Scheme 3 layout from schematic presentation

PRELIMINARY REVIEW: SCHEME 4

This scheme resulted from further exploration of schematic scheme three—and a drastic departure from the idea of a sporadically-planned parking layout to a more circulation-oriented design. The street continues upwards from grade, creating a layered parking/retail space on the lowest levels. As the parking decks wind upwards, interior space between them is created. This space can become spec office space, temporary dwelling space, or retail space with parking directly above.

Inspiration for this came from a late case study, NL's Parkhaus in Amsterdam. NL referred to their parking solution as a continuation of the road beneath. The difference between the terms *road* and *street* became important here though, as the term street was used in this project for its inference to the pedestrian playing a role equal to or more important than the automobile. Despite the concentration on circulation in this solution, clarity of circulation is not a strength. The concept of continuing the street upwards was the largest idea taken from this scheme, as the scheme as a whole was labeled as being way to complex for the scope of the project programmed herein.

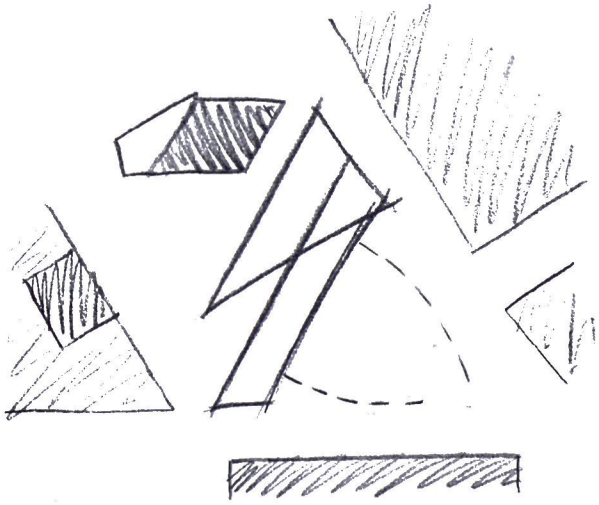


Fig. 74. Scheme 4 conceptual diagram

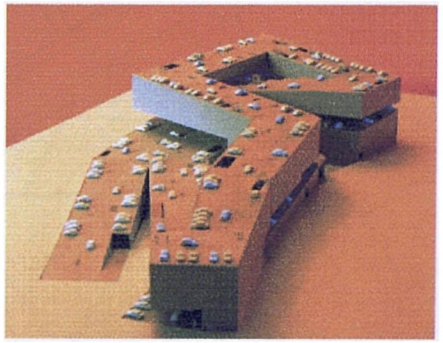


Fig. 75. Parkhaus, NL Architects, Amsterdam (http://www.archilab.org)

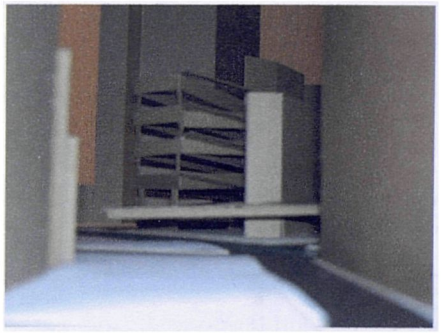


Fig. 76. Scheme 4 model, south view

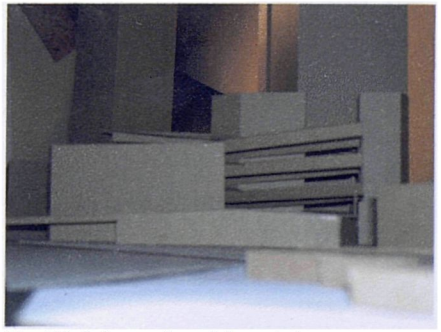


Fig. 77. Scheme 4 model, east view

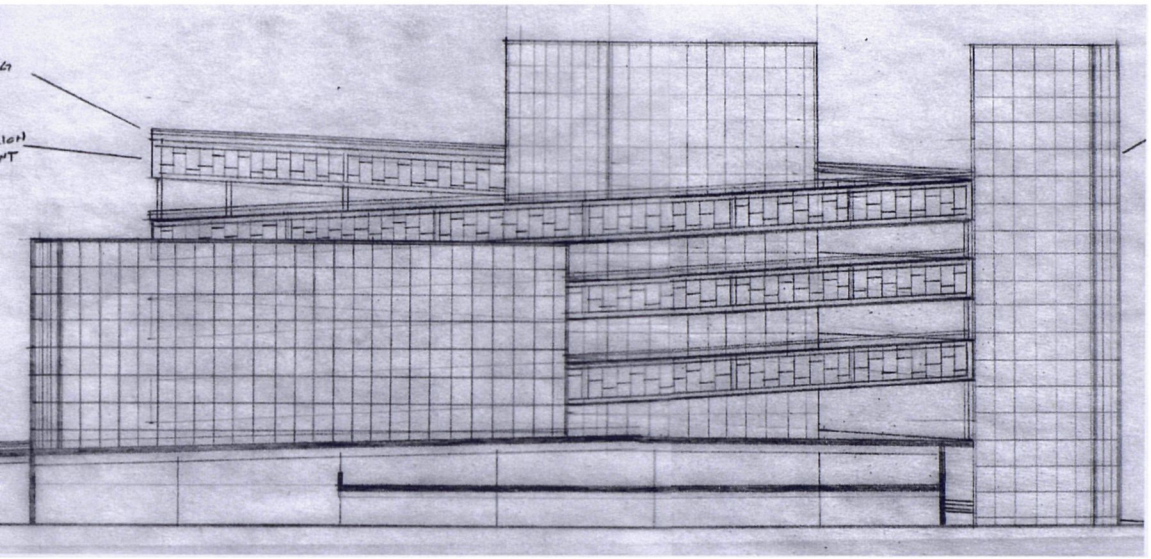


Fig. 78. Scheme 4 southeast elevation

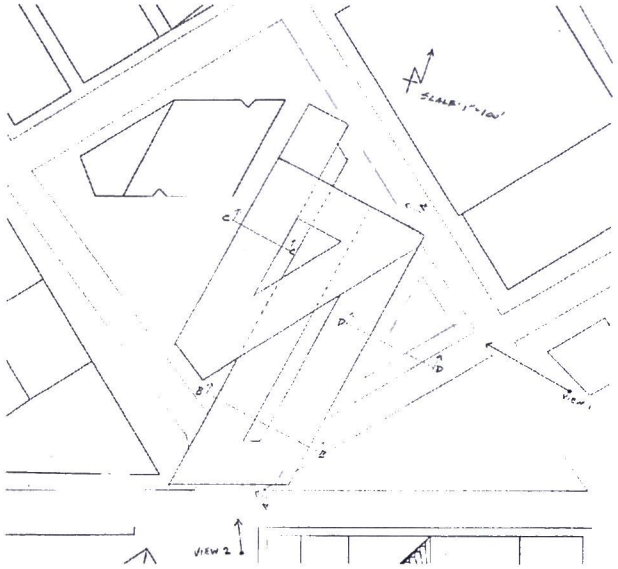


Fig. 79. Scheme 4 site plan

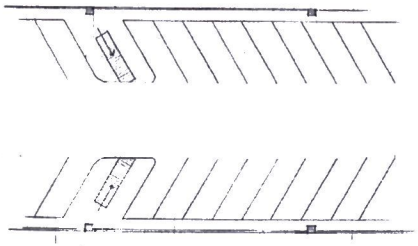


Fig. 80. Scheme 4 typical parking deck plan

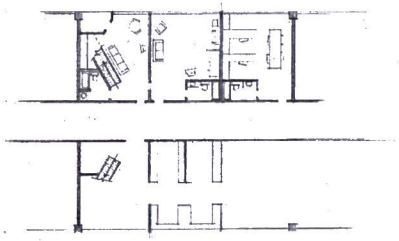


Fig. 81. Scheme 4 proposed intermediate level plan

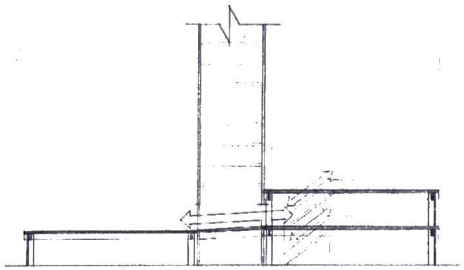


Fig. 82. Section through automobile storage tower

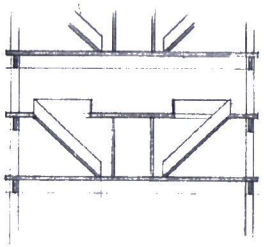
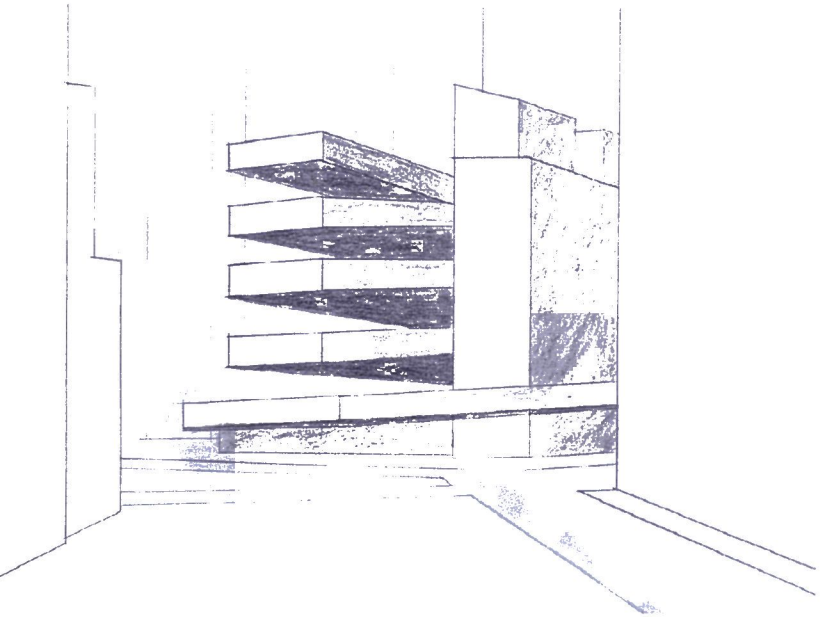


Fig. 83. Section showing parking deck--interior space vertical relationship

Plans and sections of different spaces above are and example of the integrated indoor/outdoor spaces and layered space taking place in this scheme. This leads the project focus away from the parking and toward its complicated state. A critique of the project's state at this point was that a typical, well-functioning parking structure should be used and the details should be designed to answer the programmed needs.



ig. 84. Scheme 4 view from south

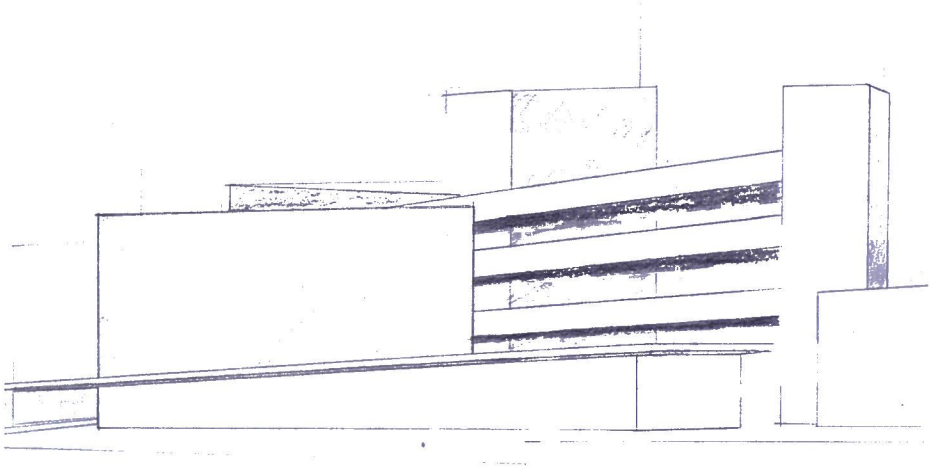


Fig. 85. Scheme 4 view from east

QUALIFYING REVIEW: SCHEME 5

This scheme shows definite progress in clarity of circulation. While the circulation is not completely borrowed from an existing parking structure type, a typical circulation pattern is adapted to the building's fairly simple form. The building's footprint follows the angles of the surrounding streets and adjacent building, creating a logical pedestrian flow alongside the building's exterior. This yields an excellent opportunity for the space in the core of the parking structure to flow out to the street and perhaps become part of the street atmosphere. It is now apparent that the spaces programmed to take place within the actual parking space should take place within the core of the structure. This raises the question of how practical the programmed overnight accommodations space is—why not simply have parking space that can be used any time of the day or night in which one can work or rest in their automobile?

The automobile storage tower has disappeared in favor of mixing a variety of users on the parking decks. If a user intending to remain in their automobile is parked with users who intend to leave their automobiles, natural surveillance of all parked automobiles increases. Natural surveillance also benefits from pedestrian walkways above double-height spaces within the parking decks. These walkways attach the conference modules on the exterior of the parking decks to the central core. These conference modules contain three spaces—a conference room, a lounge, and a resource room with printing and faxing capabilities—all meant for use by those intending to work in their automobiles.

An issue apparent in this scheme is the amount of space in the core that is left unoccupied even after incorporating the programmed spaces. A farmer's market is the first part of the answer to this problem. Downtown Dallas does have a farmer's market, although it is not centrally located for convenient use by employees in the Central Business District. The area is also in need of a grocery store, so this space can serve that purpose as well. The farmer's market occupies the first six floors of the core and flows out to the street via kiosk retail spaces, a café, and a restaurant.

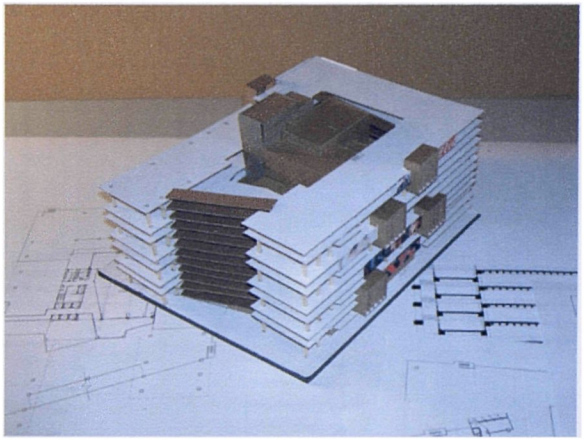


Fig. 86. Scheme 5 model, south view

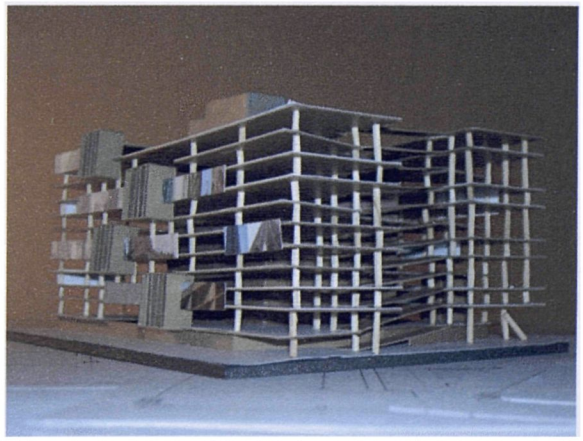


Fig. 87. Scheme 5 model, west view

Above the farmer's market are three levels dedicated to performance and meeting functions. These spaces can be reserved by those using the parking structure to work in or by companies in the surrounding business district needing a small convention-like space.

Above the meeting/performance space is a recreational space. This space is geared for use by those parking in the facility and those who work nearby. The relationship of the recreational space to the parking structure is verified by the increasing amount of time the typical commuter spends behind the wheel each day. Recreational activity is needed more than ever in today's society.

It should be noted that what is important with the space inside of the structure's core is its relationship to the parking decks. Regardless of the space's function, people should be able to easily flow between the parking decks and interior spaces, thereby increasing natural surveillance of the parking area. This relationship is enhanced with gradually subtracting space from the core upwards from grade and further relating these spaces to the parking decks as terraces. These terraces also function as light wells, bringing light deep into the parking decks opposite their open façade.

The focus of the project should now shift to the cladding of the building. The spaces are adequately designed, although the details of the relationship between the building and the streetscape need to be worked out at this point.

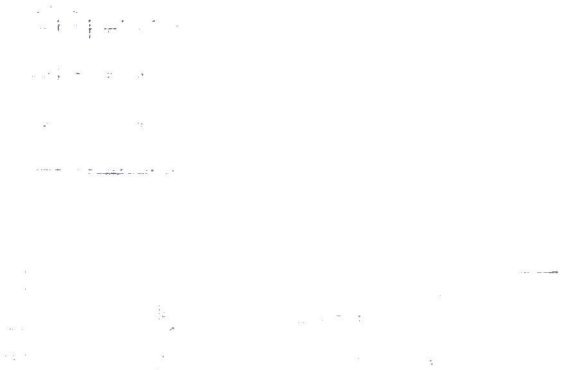


Fig. 88. Partial elevation/cladding study, following scheme 5

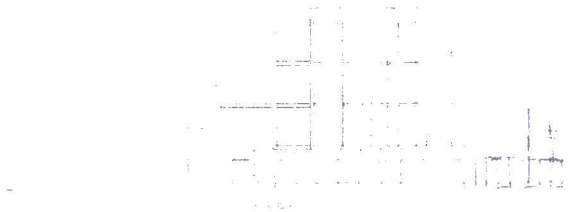


Fig. 89. Partial elevation/cladding study, following scheme 5

Fig. 90. Scheme 5 digital model, south view

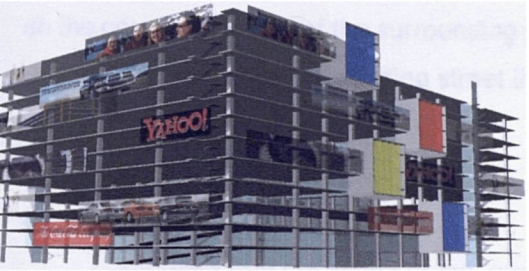


Fig. 91. Scheme 5 digital model, north view

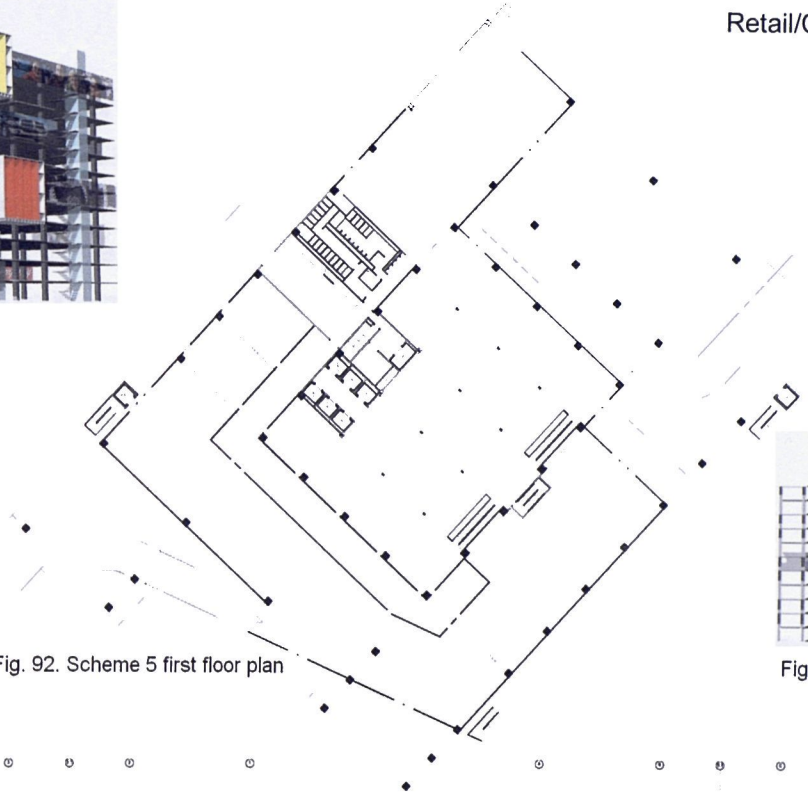


Fig. 92. Scheme 5 first floor plan

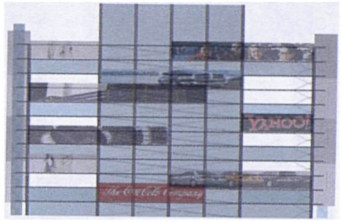


Fig. 93. Scheme 5 northeast elevation

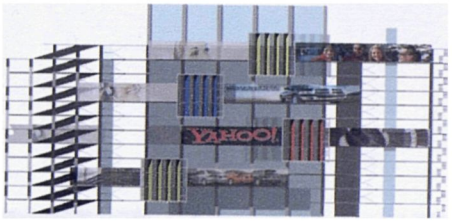
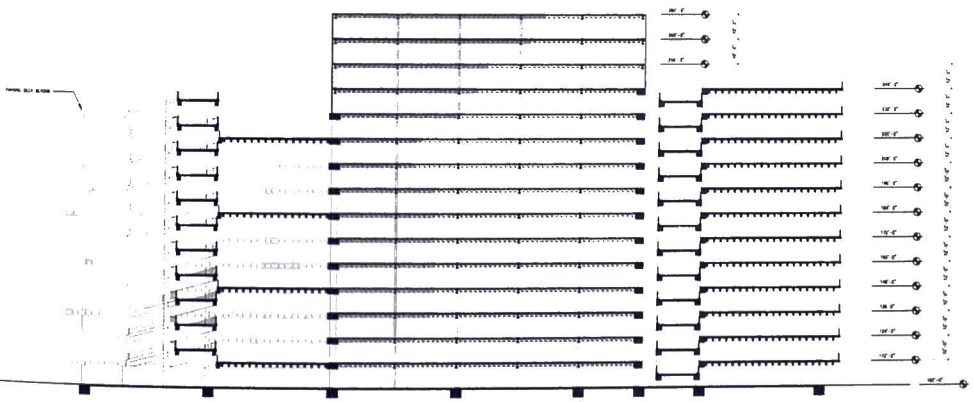
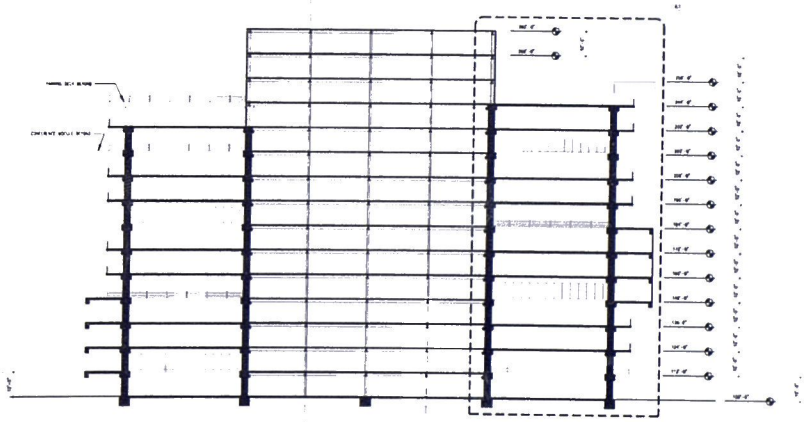


Fig. 94. Scheme 5 southeast elevation





g. 95 (above), 96 (above right). Scheme 5 sections

FINAL DESIGN PROPOSAL

Further exploration of the scheme presented for the qualifying review resulted in the final design proposal for a new parking structure in Dallas's Central Business District. The form of the parking structure has become second to its function, and the form yields the space for the functions inside of the core of the structure. The footprints of all spaces above the farmer's market are angled to create more courtyard-like spaces between the core and the parking structure. Structurally, the core is composed of steel beams and joists that rest on the concrete beams of the surrounding parking structure. The space in the core flows out to become part of the surrounding street life, and is related to the parking decks throughout the facility.

Fig. 97. Partial south view

Ground Floor Plan

The idea that the space in the core of the facility flows out to the surrounding street drives the building's organization on the ground level. The farmer's market meets the street on both the northeast and southeast sides, while the core meets the street via a restaurant and café on the southwest and northwest sides. The north corner of the building also contains a small gallery at street level that is linked to the retail space behind.

Outdoor dining creates an occupied space out of the elevator entry and stair landings at the west corner of the building. The same concept increases the activity at the corner of Saint Paul and Live Oak Streets outside of the café. The interior design of the restaurant and café should carry outside and begin to define a perceived border between the outdoor dining and sidewalk. Street furniture such as planters, benches, and street lights should be used to physically clarify this border.

As seen in the circulation diagram, the existing service space for the adjacent building (One Dallas Centre) is taken advantage of to bring goods into the building and to dispose of trash. The freight elevator, management and receiving offices, the ground floor of the farmer's

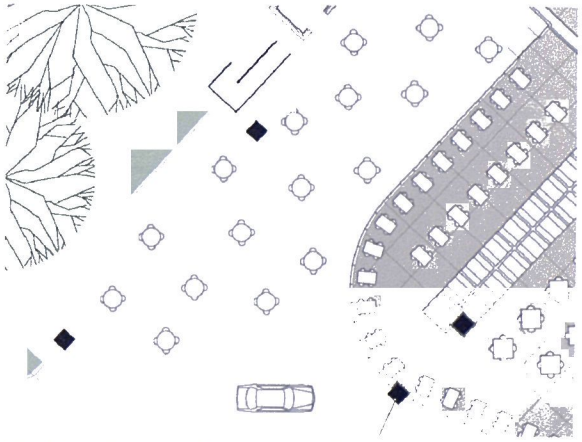


Fig. 98. Partial ground floor plan highlighting outdoor dining and restaurant

market, and the restaurant's kitchen are all accessible from the loading dock area. Horizontally opening panels with translucent glazing (much like a garage door) allow the manipulation of pedestrian traffic between the street and interior of the facility. Almost the entire ground floor is capable of becoming one with the surrounding streetscape in decent weather.

Select floor plans above the ground floor show the performance space and recreational spaces, including the roof-top pool and sundeck.

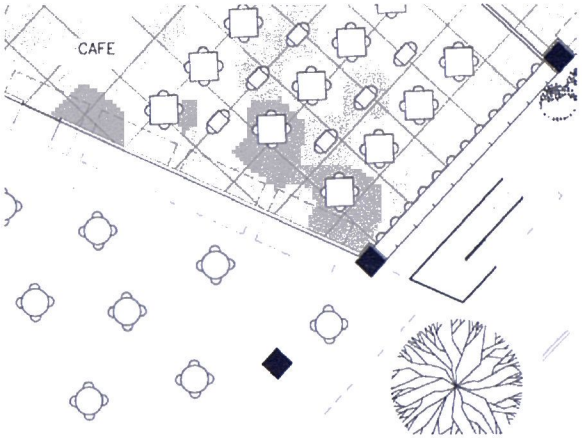
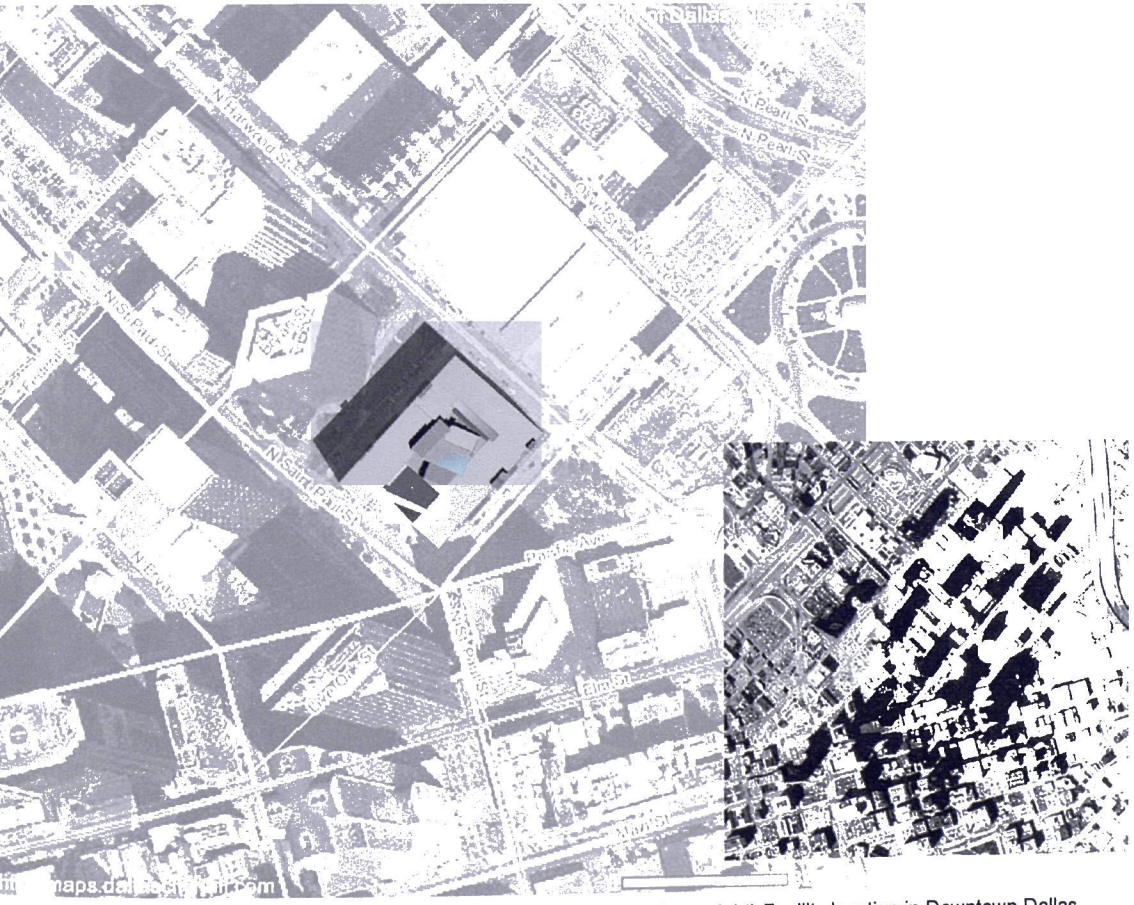


Fig. 101. Partial ground floor plan highlighting outdoor dining and cafe



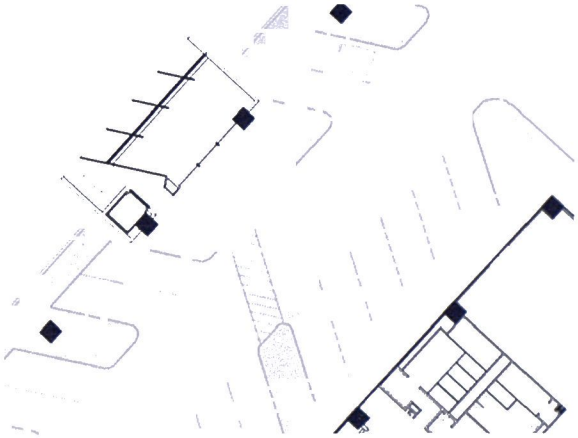


Fig. 102. Partial floor plan highlighting conference module

Fig. 99 (above) Aerial view of building and surrounding context, Fig. 100 (above right) Facility location in Downtown Dallas

1. Gallery
2. Loading
3. Kitchen
4. Farmer's Market
5. Restaurant
6. Cafe
7. Outdoor Dining

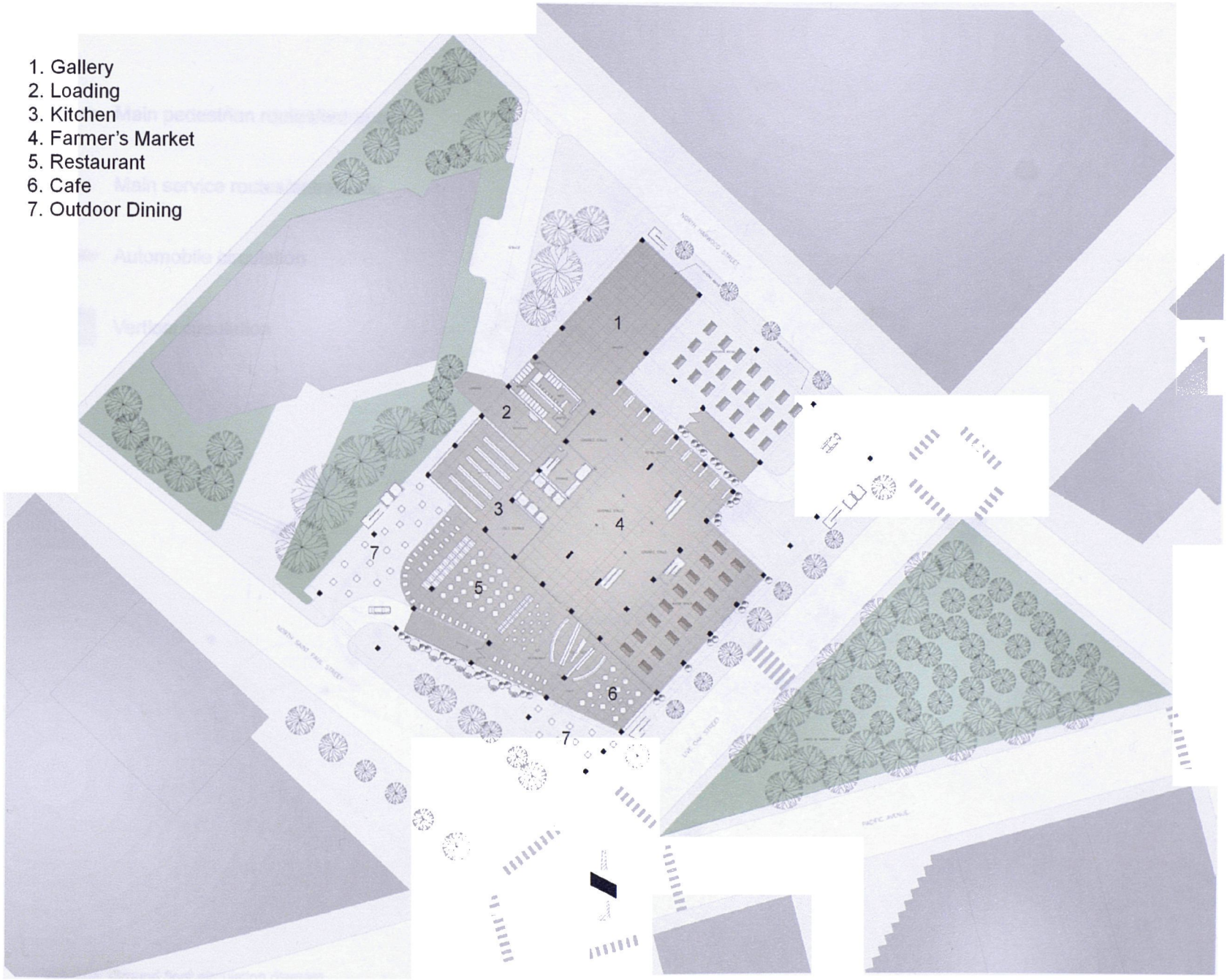


Fig. 103. Ground floor and site plan

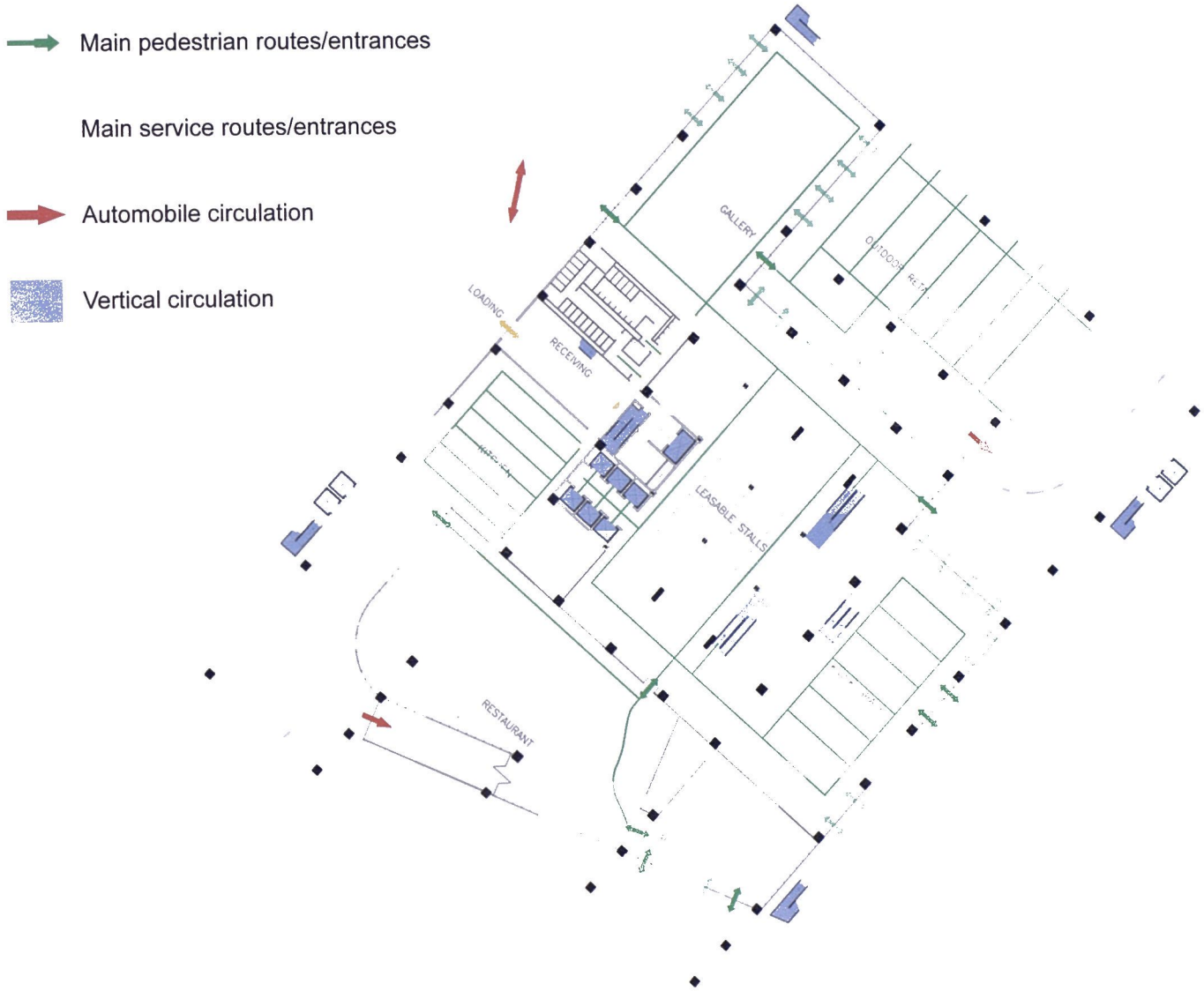


Fig. 104. Ground floor circulation diagram

Fig. 105. Second floor plan, farmer's market

Fig. 106. Fifth floor plan, farmer's market

Fig. 107. Seventh floor plan, performance space

Fig. 108. Tenth floor plan, recreational space

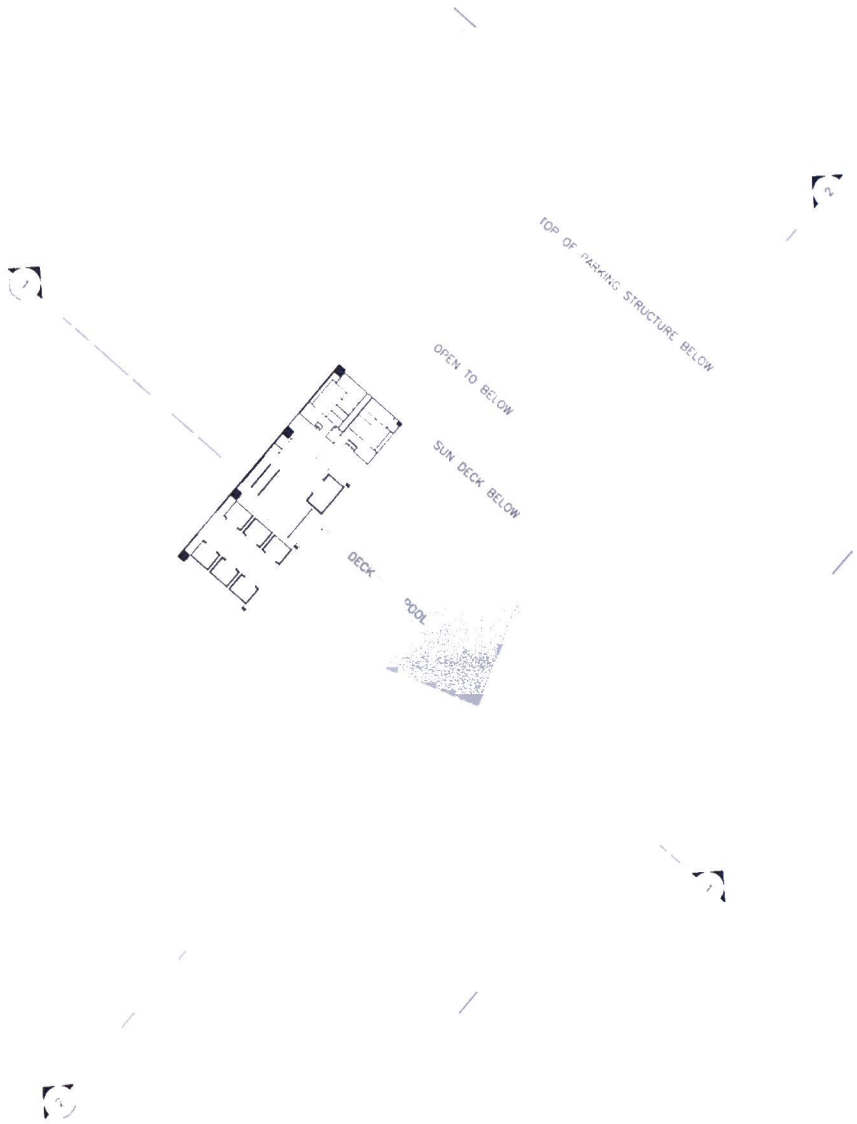


Fig. 109. Fourteenth floor plan, recreational space

Elevations

A variety of cladding was used on this building to bring a tasteful image to what is typically an aesthetically bland building type. While covering up most of the structure's dominating horizontal concrete slabs and parked cars, the facility's innards are tactfully revealed at transitions between the following cladding types:

1. Poly-carbonite panels suspended in a tubular steel frame: This shelters the outer stair wells of the parking structure and creates a glowing series of panels at nighttime through which forms can be seen moving up and down the stairs.
2. Architectural mesh suspended in a tubular steel frame: This allows airflow through the parking decks while functioning as a shading device during the day and a lighting effect at night. The panels of mesh are lit from both sides along their surrounding tubular steel frame, creating a soft-silver reflection both inside and outside of the parking deck.
3. Natural cladding: Use of plant-life as cladding softens the image of the heavy concrete slabs and steel structure of the other cladding methods. Natural cladding also allows the building to relate directly to the surrounding green spaces.
4. Open deck with cable railing: This allows airflow through the parking decks and, where it is the only cladding (or lack thereof), reveals the facility's function.
5. Digital panels: Although not shown on the elevations here, it is intended that digital projection panels become part of the building's exterior. While animating the building with projections of surrounding movement, movement within the facility, advertisements, and other film-like compositions, the building could become a virtual gallery of visual information for the pedestrian or motorist passing by.

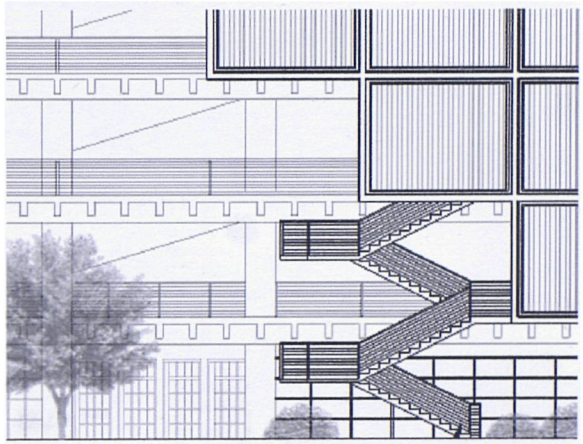


Fig. 110. Partial southeast elevation

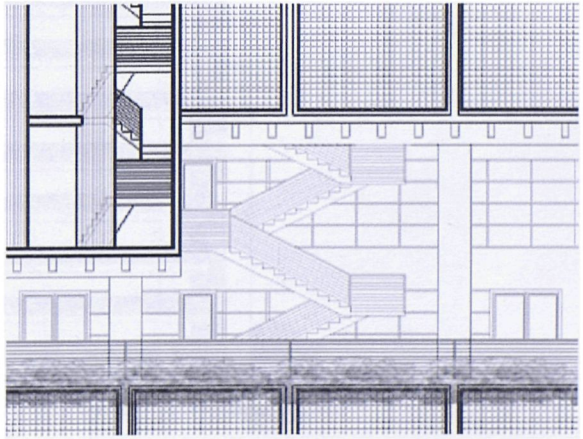


Fig. 111. Partial southeast elevation

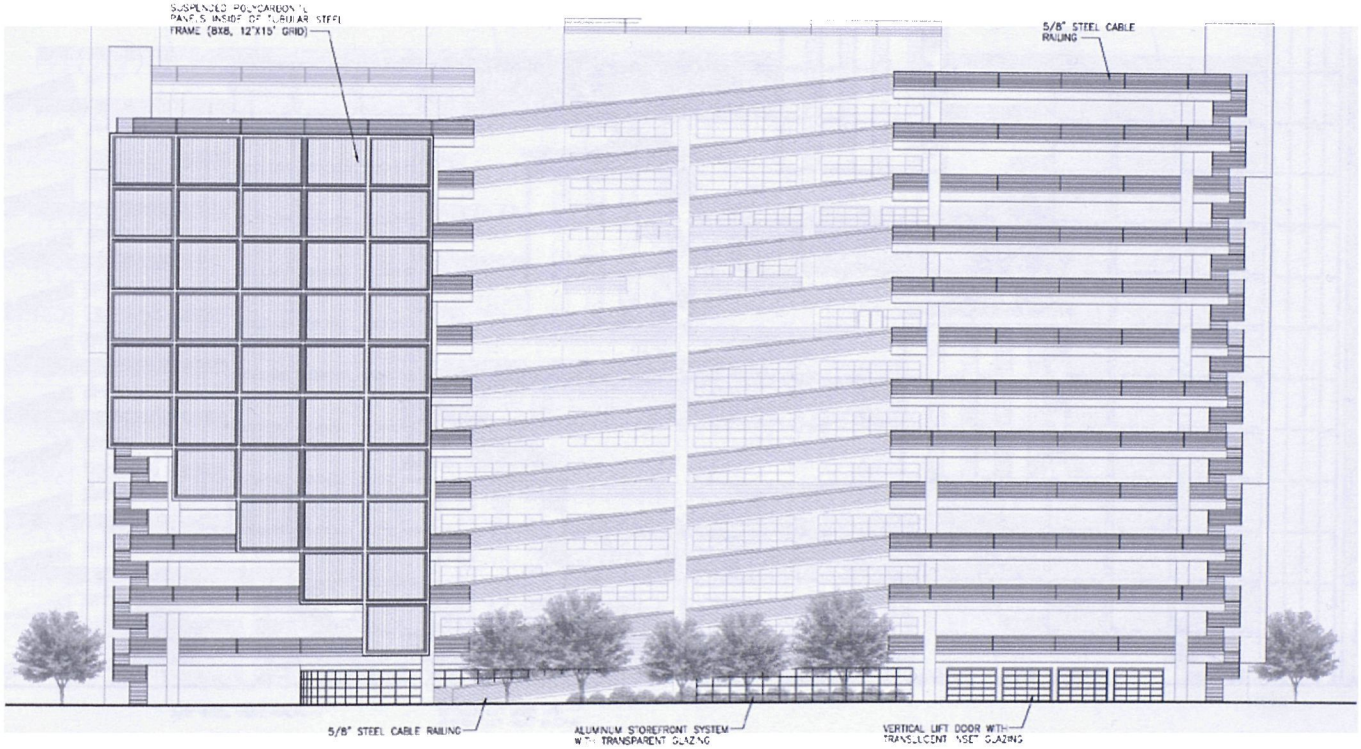


Fig. 112. Southwest elevation

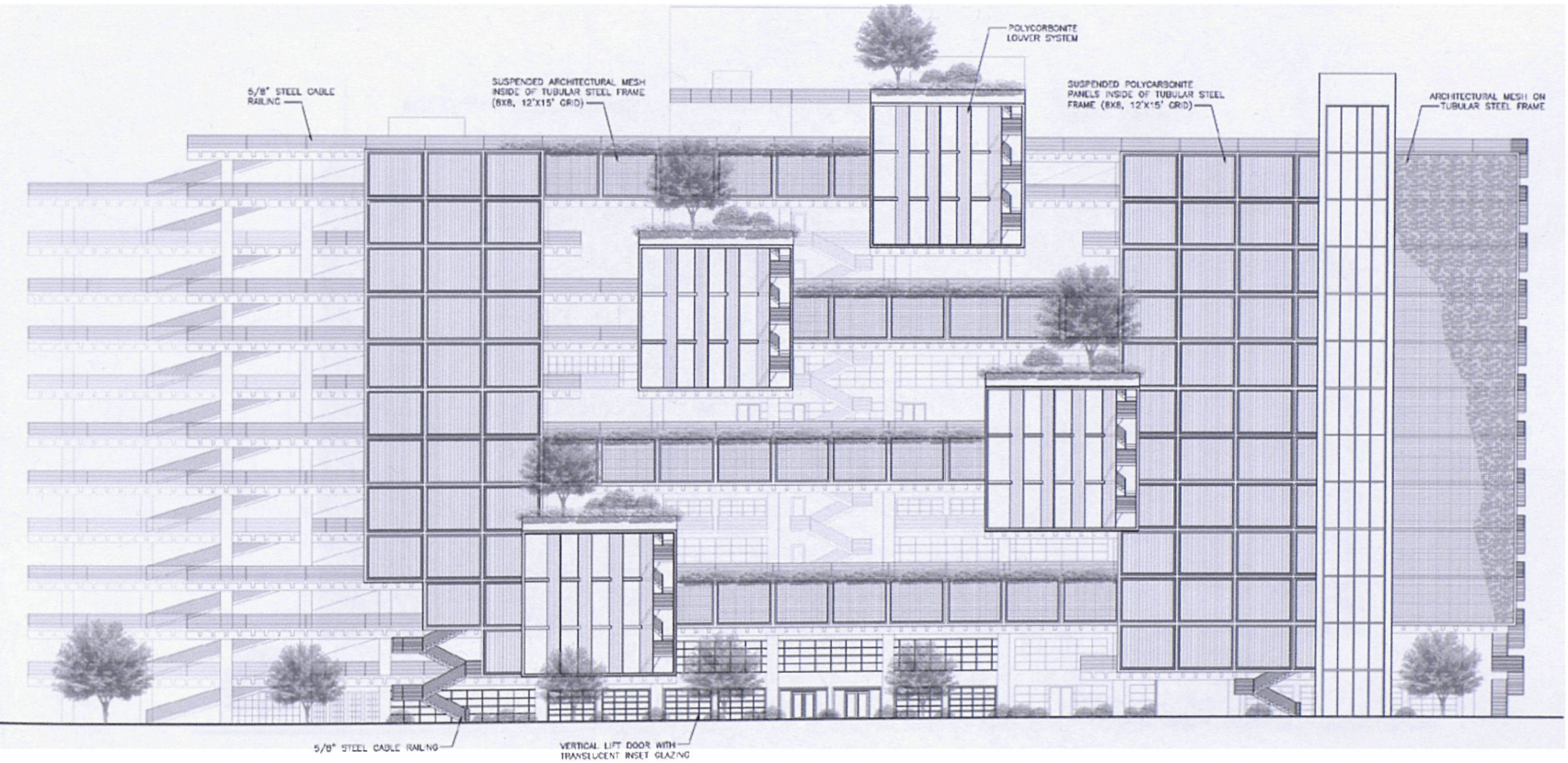


Fig. 113. Southeast elevation

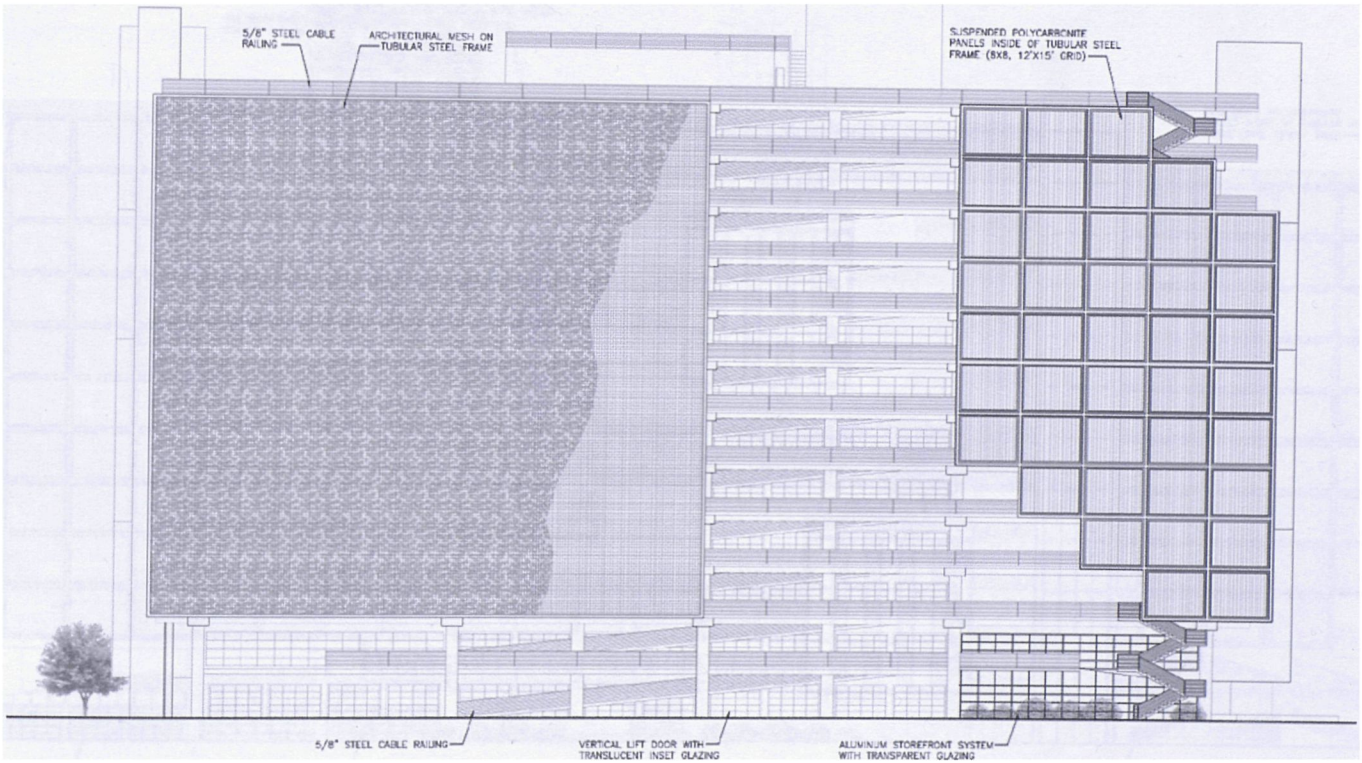


Fig. 114. Northeast elevation

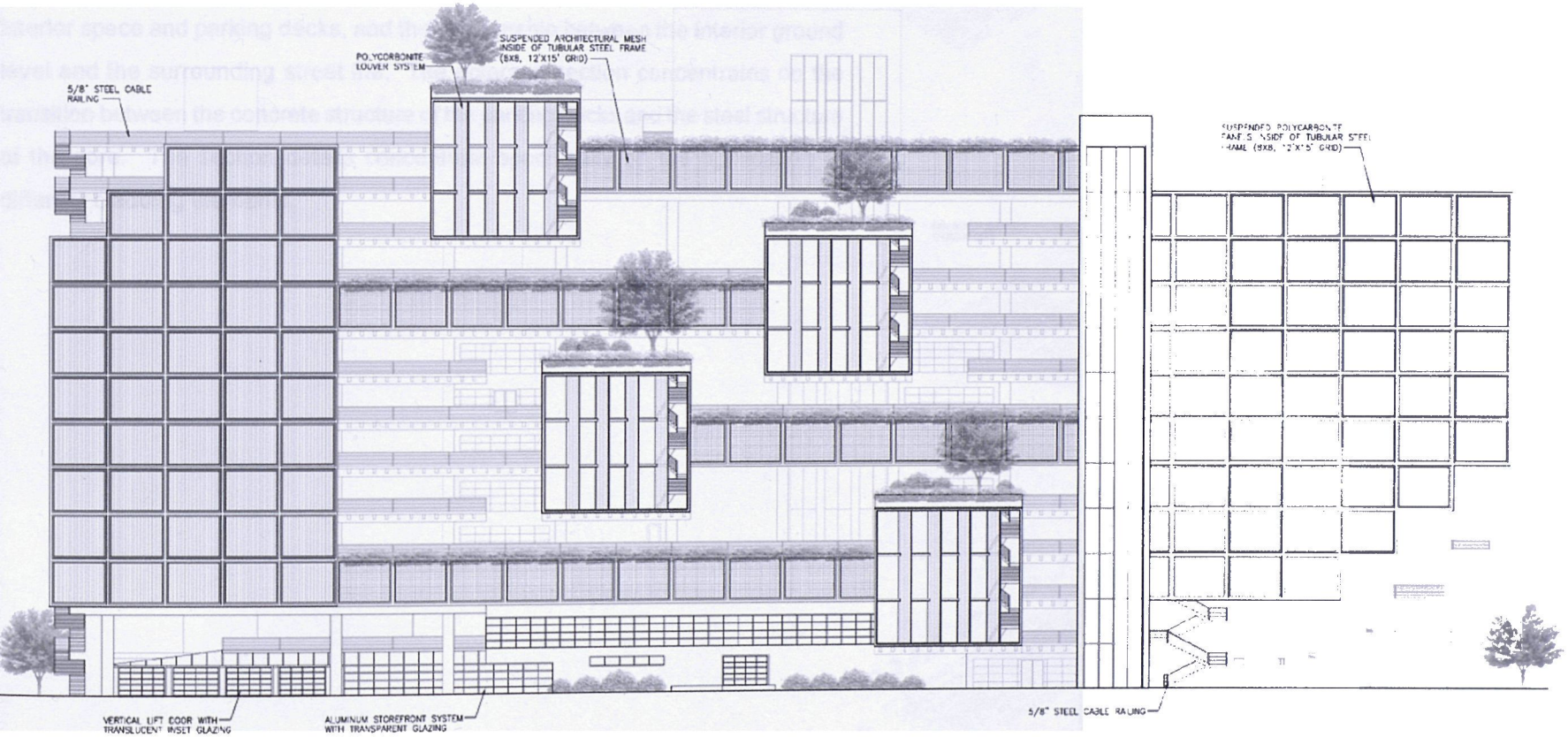


Fig. 115. Northwest elevation

Structural and Mechanical Components

The adjacent diagram shows the relationship of the concrete-structured parking decks and the steel-structured core to the vertical circulation in the core and the HVAC distribution and return. There is a fan room located on every third level beginning with the second level.

The cross-sections of this facility highlight the relationship between the interior space and parking decks, and the relationship between the interior ground level and the surrounding street life. The enlarged section concentrates on the transition between the concrete structure of the parking decks and the steel structure of the core. The section details concentrate specifically on the application of different cladding elements.

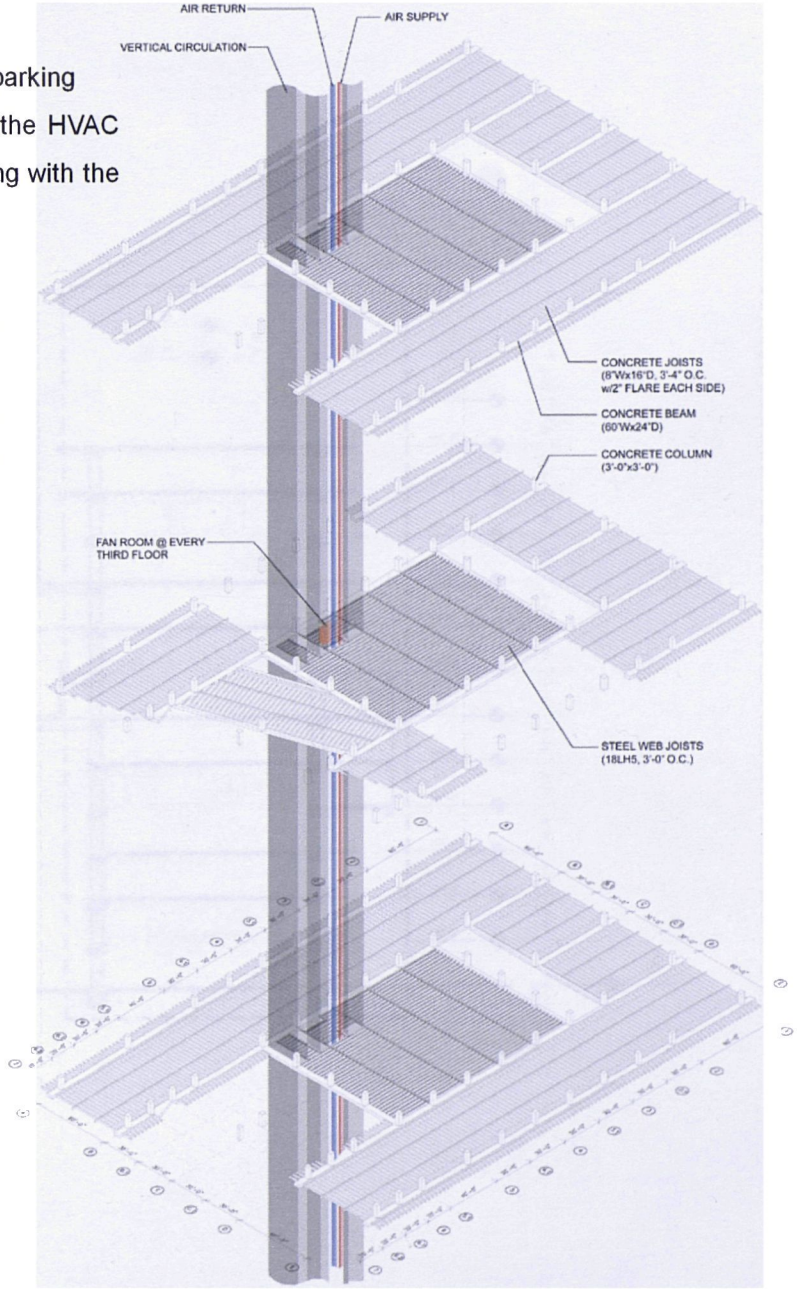


Fig. 116. Structural/HVAC/vertical circulation diagram

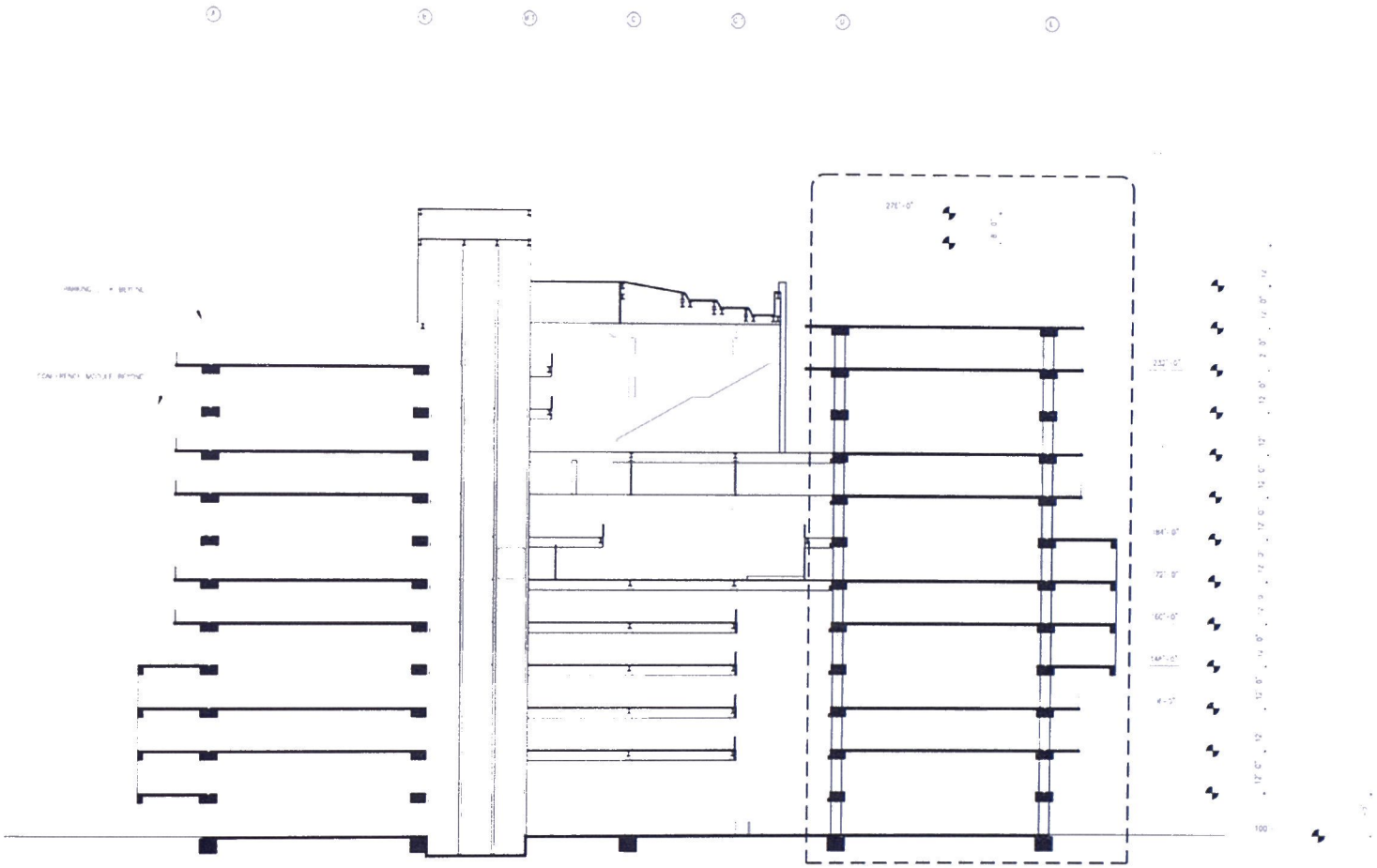
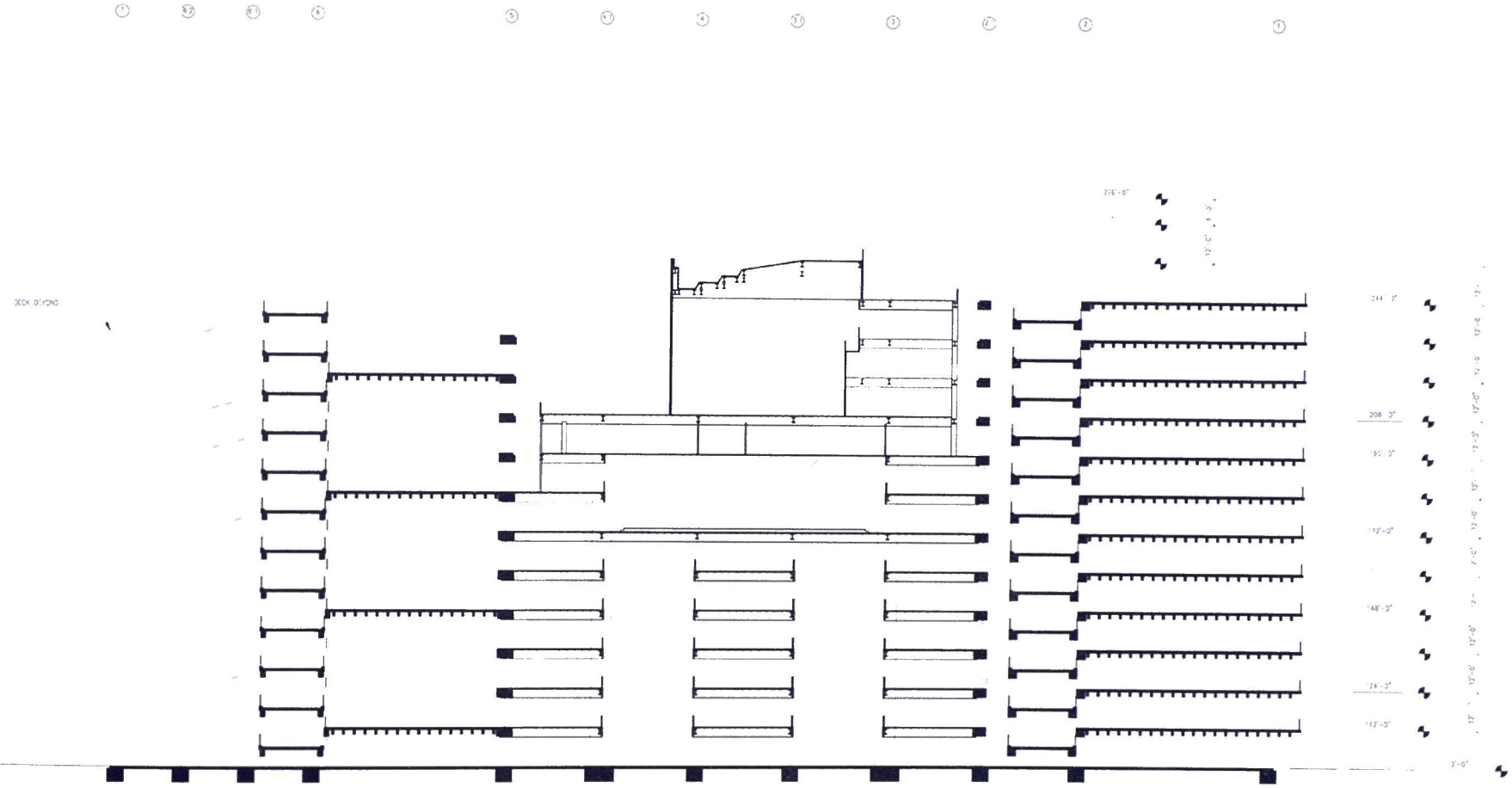


Fig. 117. Section A-A



118. Section B-B

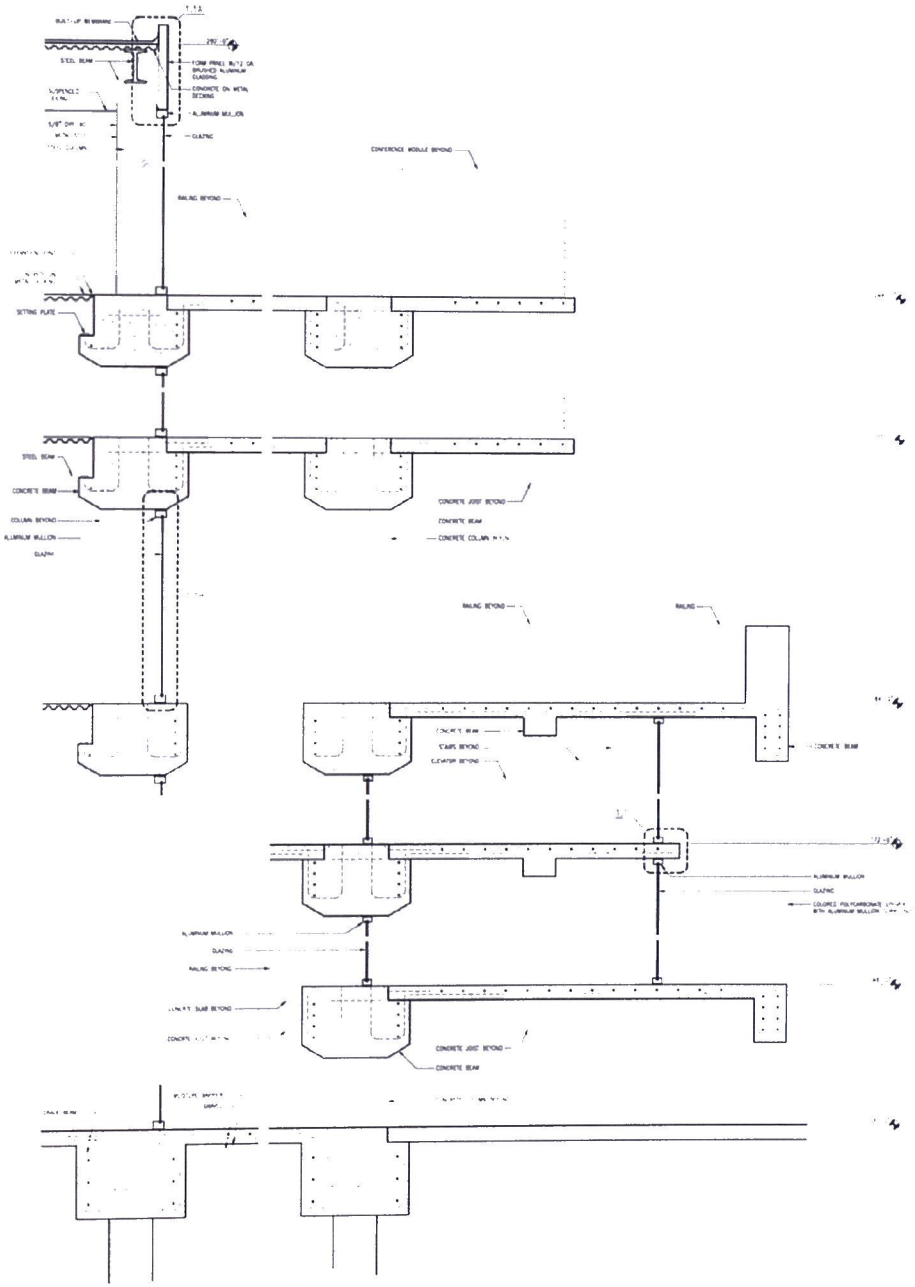
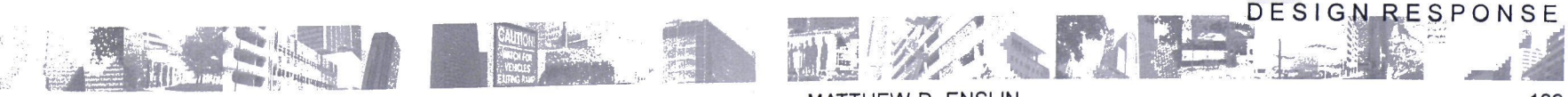


Fig. 119. Enlarged section A-A



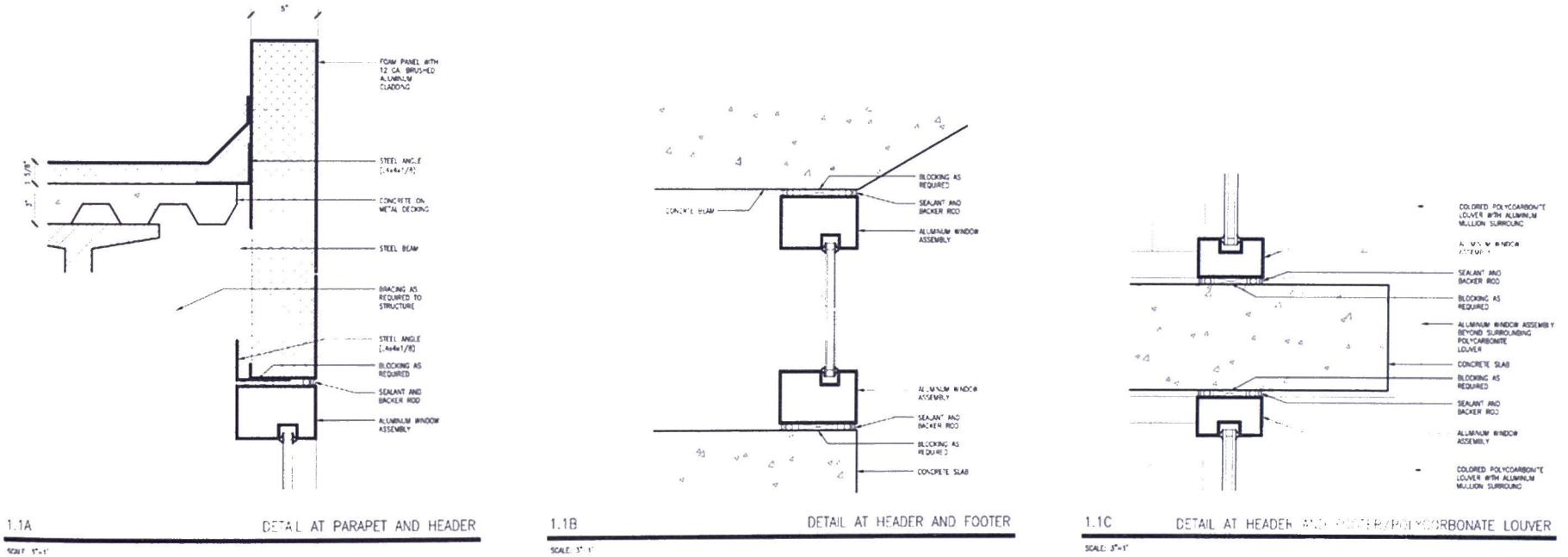


Fig. 120, 121, 122. Section details

Interior and Exterior Renderings

The following interior renderings concentrate on the space and quality of natural light within the parking decks. The natural cladding on the facility's exterior should transition to the interior of the parking decks whenever possible. Artificial lighting is also of importance here—differences in lighting could perceptually clarify spaces and highlight spatial importance. For example, the conference space could be lit in a different manner than the bordering parking deck.

Highlighted in the exterior renderings is the need for the building to interact with the surrounding street life. The garage door awnings are shown both at the border between the café and outdoor dining along North Saint Paul Street and at the border between the farmer's market and sidewalk along Live Oak Street. The building's cladding elements are also shown in relation to each other and different elements of the building (stairs, elevator shafts, conference modules, horizontal concrete slabs, etc.).

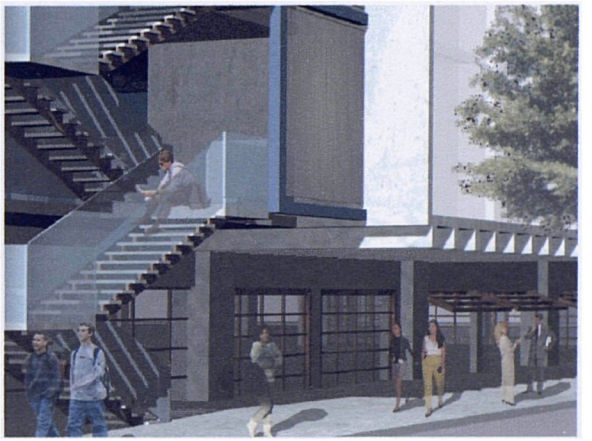
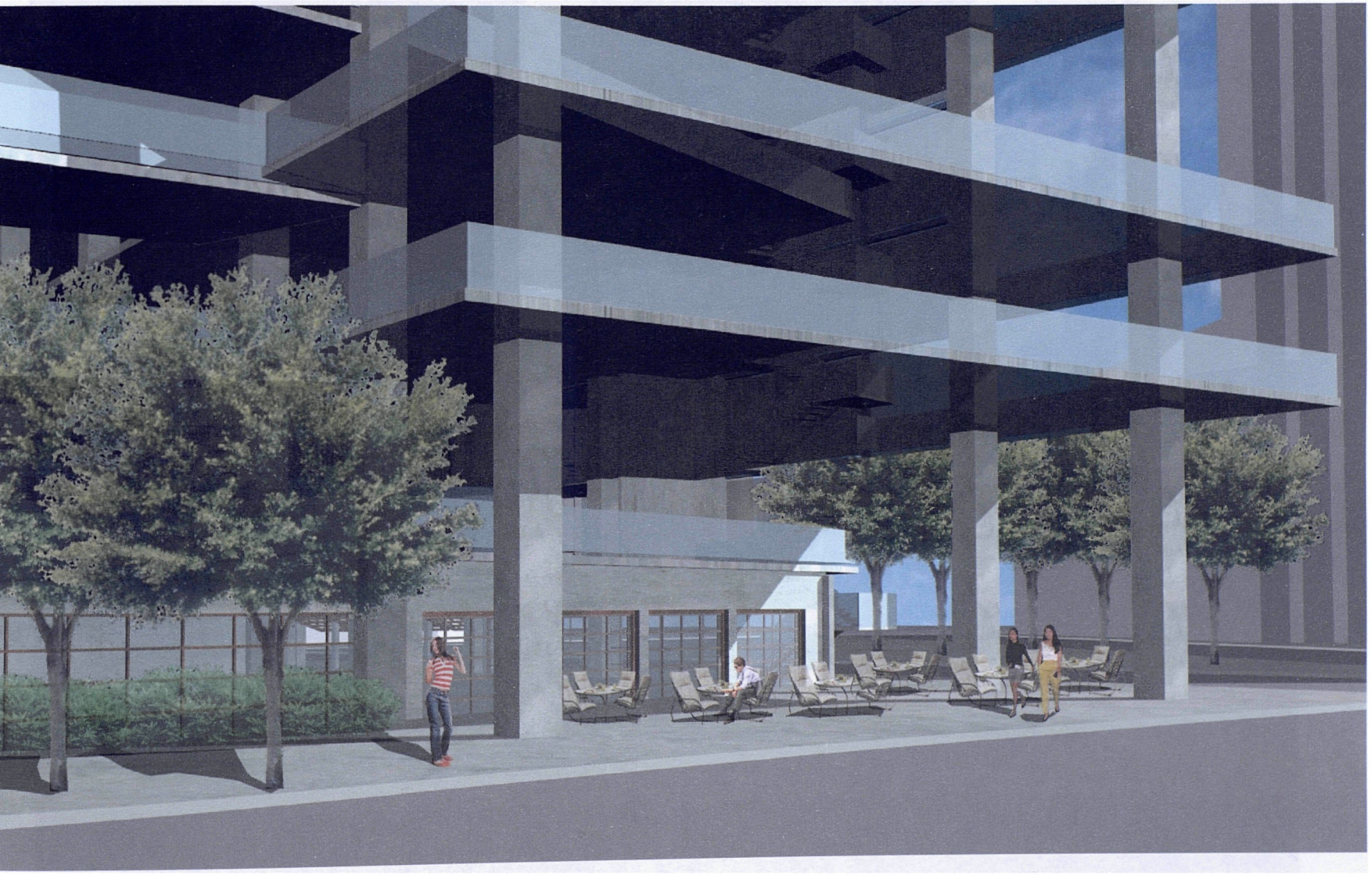


Fig. 123. Partial southeast view.

Fig. 124. Interior view of typical parking deck

Fig. 125. Interior view of conference module

Fig. 126. View from south corner of North Saint Paul and Live Oak Streets



27. View of cafe and outdoor dining from across North Saint Paul Street

Fig. 128. View along Live Oak Street

FINAL PRESENTATION DOCUMENTATION

Fig. 129. Final presentation layout

DESIGN RESPONSE

Fig. 130. North aerial view of model and surrounding context

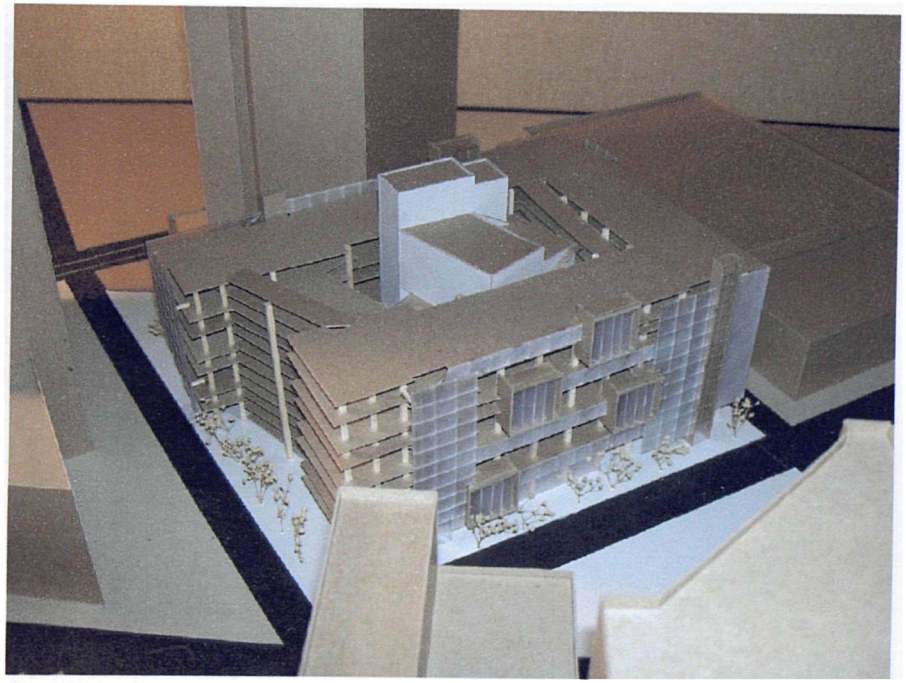


Fig. 131. South aerial view of model and surrounding context

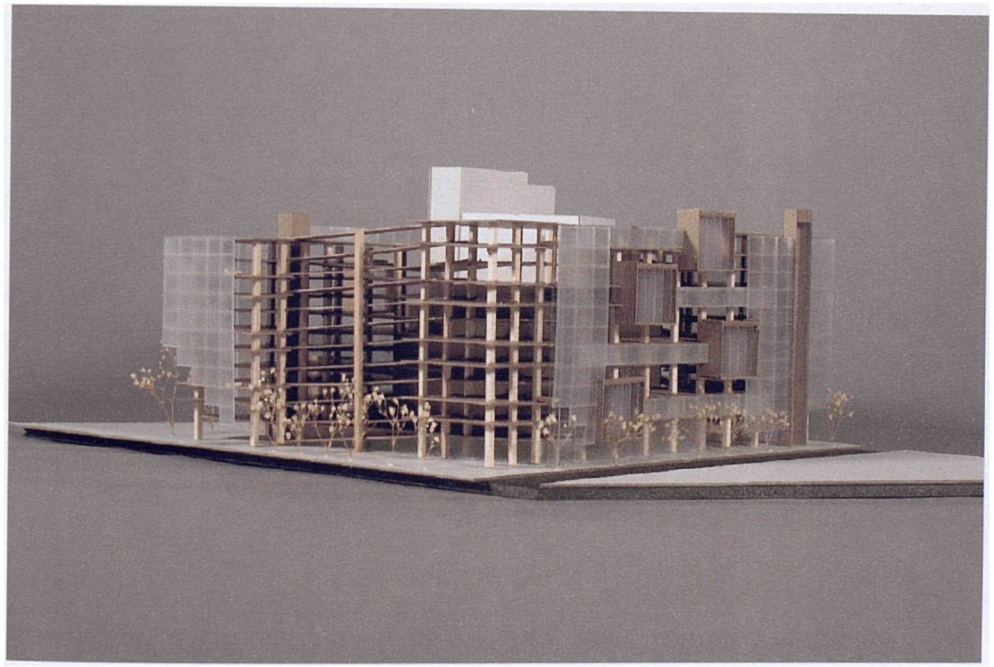


Fig. 132. South view of model

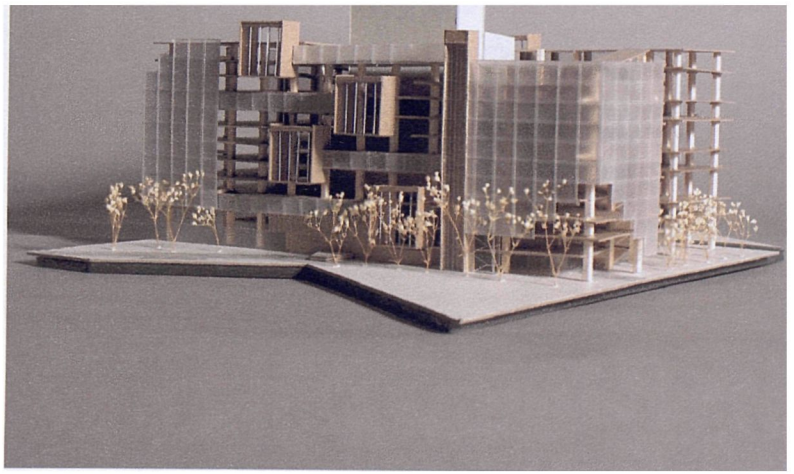


Fig. 133. West view of model

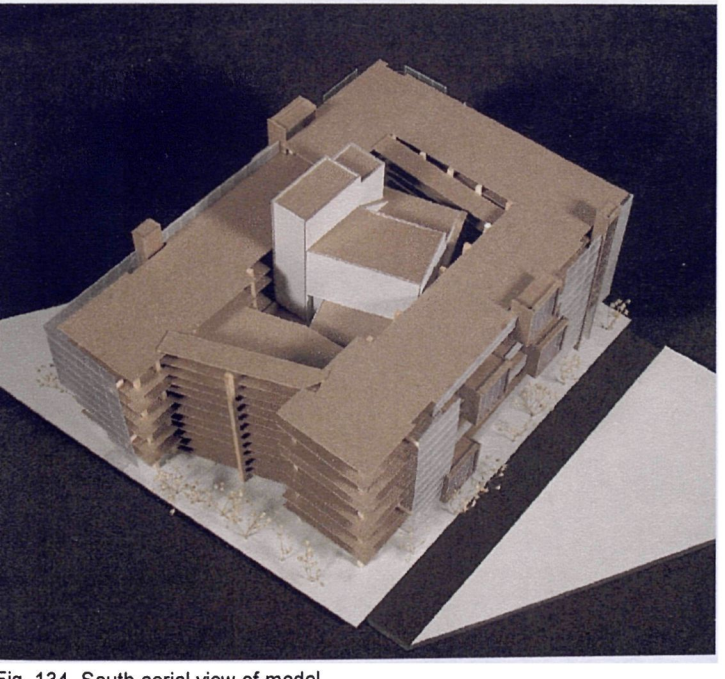


Fig. 134. South aerial view of model

Fig. 135. West aerial view of model

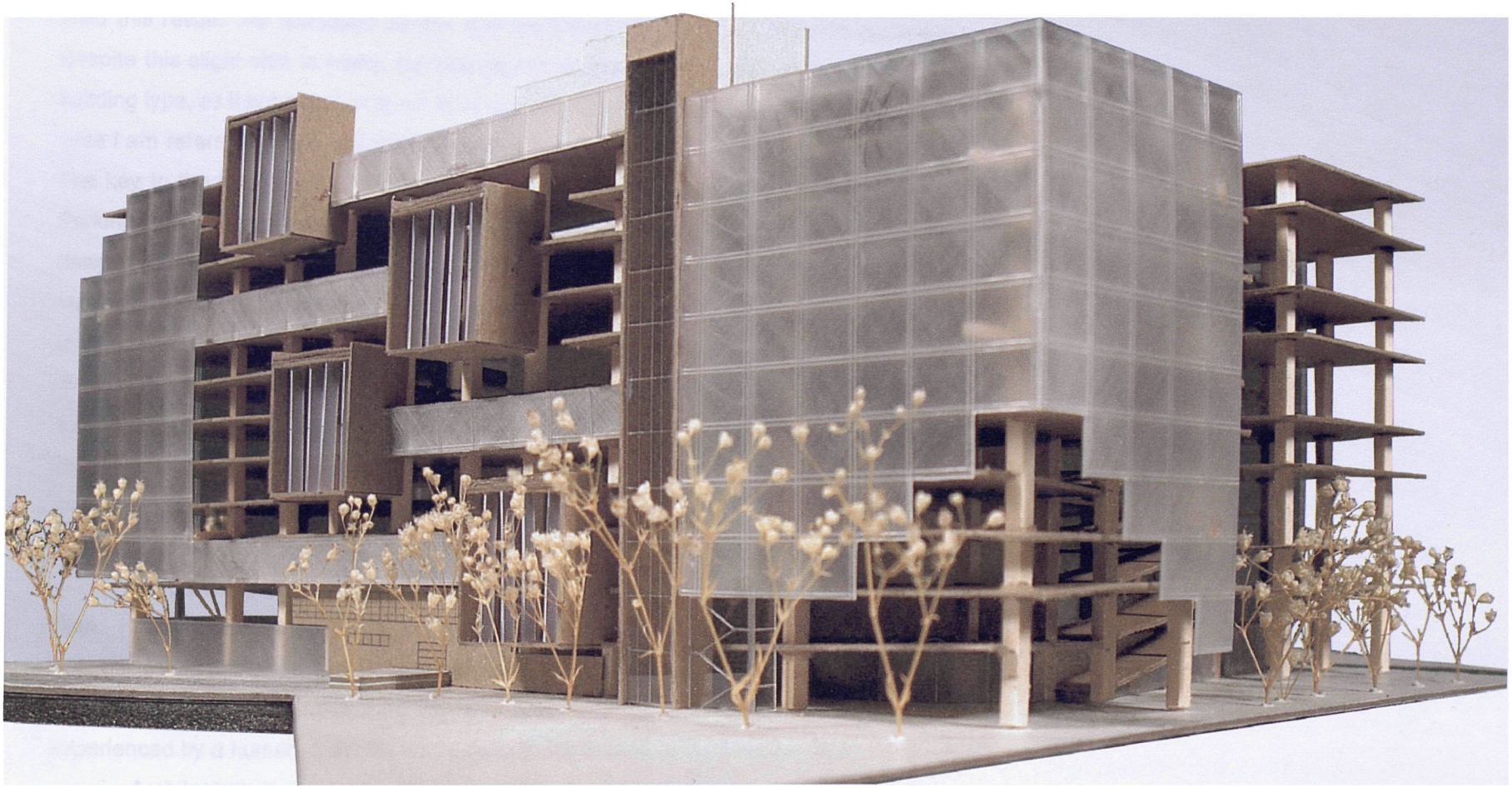


Fig. 136. West view of model from street level

EPILOGUE

Responding to the Designer's Personal Goals

While I can say that I originally intended this building to become a ground-breaking departure from traditional parking structures, particularly in form, the outcome does not readily yield this result. As discussed earlier, one must study the details to find this departure. Despite this slight shift in intent, the final design proposal does consist of an entirely new building type, as it not only combines, but integrates uses not yet integrated in practice. The uses I am referring to are, specifically, storing an automobile and working to earn a living. The key to the integration of the other uses in this facility is their relation to the parking. Parking here was the central idea to which everything had to relate—whereas to often in the design profession parking is the afterthought that is somehow tied to its related space only by means of pedestrian circulation. The big concept in this design proposal that applies to all buildings is that, in my opinion, it enhances its surroundings. It contributes to the street-life in Dallas's Central Business District and therefore enhances safety and security while promoting a culturally diverse atmosphere around and within the building. It is my belief that it is the responsibility of the architect to utilize architecture as a tool to enhance its existing surroundings, no matter what the context.

Shifting Views and Final Thoughts

Before this point, I have always felt that true architecture occurred mostly in building form. I have since developed a great interest in how things are put together, on all levels, from basic volumetric spatial relationships to the construction detail of a concrete slab meeting a tubular steel frame. Architecture happens in every aspect of any structure that can be experienced by a human, from the whole building form down to the smallest detail.

Architecture is most powerful in its ability to affect one's experience of a space. Parking structures are *also* buildings that we experience. By this, I mean that they demand attention equal to what the design profession would give an art gallery, or should give any

other building type. In my opinion, a poorly designed parking structure that does not consider the human experience spoils the whole experience of a well-designed space related to that parking structure. Santiago Calatrava's addition to the Milwaukee Art Museum is the most successful building I have seen in not falling victim to this problem. The architectural relationship of the parking structure beneath to the gallery above is seamless, as the design quality is consistently incredible.

Recommendations

To future thesis students: Do not lose sight of your original intent for your thesis project. Most of all, have fun with it and keep in mind that it is part of a process. It is the transition that marks the end of your academic career but the beginning of a great professional career. Take this seriously, as it is your *thesis project* (or final design project, or whatever else it is "officially" referred to as in the future), but do not take it *too* seriously. You should still have a life outside of the architecture building, and you should still eat and sleep! Also, remember to look for a job near the end of the year, as life does go on.

Acknowledgements

Thanks to my advisor, Catherine, for being concerned about her students' health, safety, and welfare, as architects in practice are ethically bound to do for their clients and the general public. Thanks to Dr. Galley (that's Catherine) and Professor Peters for the knowledge they have shared with me on not only this thesis topic, but architecture and life as an architect in general. Thanks to all of the professors I have had and staff in the College of Architecture who have contributed not only to my education, but to my overall experience here at Texas Tech University.

Thanks to my parents, Dave and Sue, to whom this document is dedicated, for their encouragement and skills beyond that of just parenting but being two of my best friends—Thank you Mom for taking care of me while I wrote this program and started a great career with an internship in Dallas; thank you Dad for taking me to look at houses when I was ten years old; thank you both for buying me tons of Legos and then graph paper and pencils.

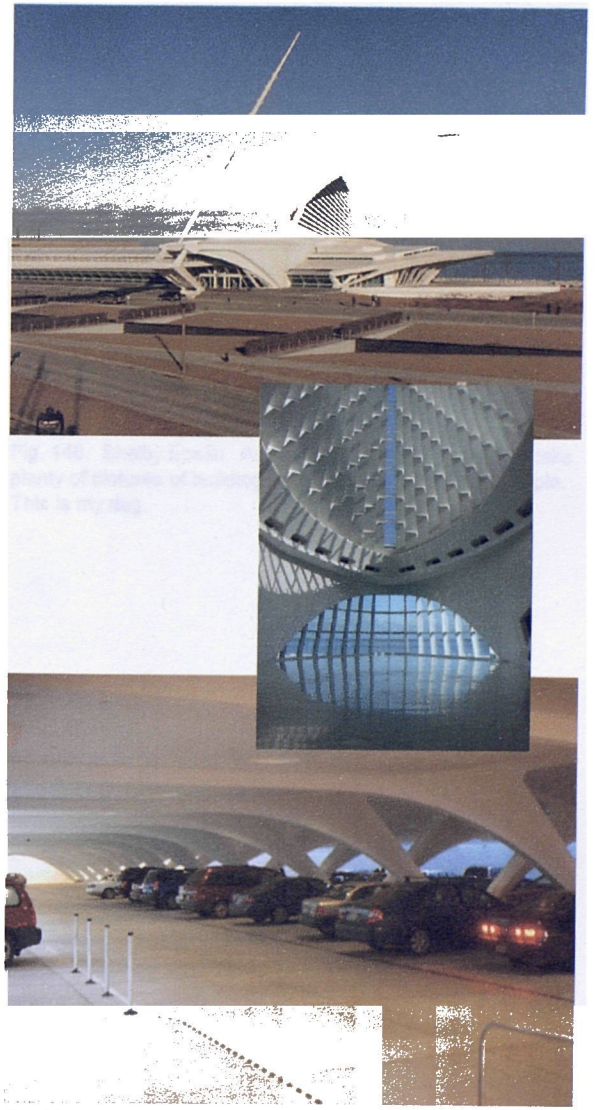


Fig. 137, 138, 139. Addition to Milwaukee Art Museum, Santiago Calatrava, Milwaukee. Images showing design relationship of exterior to interior to parking

Thanks to my brother and another best friend, Marc, for washing the dishes and cleaning the apartment while I lived in the architecture building to finish this document and the design proposal within. Thanks to my dog, Shelby, for greeting me so happily every time I walked in the front door of my home (in Flower Mound, TX).

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Fig. 140. Shelby Enslin. As most architecture students, I take plenty of pictures of buildings and very few pictures of people. This is my dog.

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APPENDIX A

APPENDIX A: SURVEY, AN AUTOMOTIVE CULTURE

68 respondents via written and web-based questionnaires
Response optional on all questions

1. How much time do you spend in your car each day?

Less than 10 minutes	4	(6%)
10-30 minutes	21	(31%)
30-45 minutes	16	(24%)
45-60 minutes	7	(10.5%)
60-90 minutes	11	(16.5%)
More than 90 minutes	8	(12%)

2. How many miles do you put on your car each day?

Less than 100	1	(1.5%)
1,000-5,000	4	(6%)
5,000-10,000	19	(28%)
10,000-20,000	36	(54%)
More than 20,000	7	(10.5%)

3. Mark the top four of the following destinations that you travel to by car.

Grocery store	57	(20.5%)
Work	47	(17%)
Restaurant	36	(13%)
Entertainment	33	(12%)
Mall/other shopping needs	31	(11%)
School/children	24	(9%)
Religious Purposes	16	(6%)
Gym/recreational activities	15	(5.5%)
Medical Purposes	12	(4%)
Parking for mass-transit (trains or busses)	5	(2%)

4. Which activities do you (as the driver) engage in while in your car (whether parked or in motion)? Please mark all that apply.

Listening to music	65	(31%)
Talking to passengers	52	(25%)
Talking on the phone	47	(22.5%)
Day dreaming	30	(14%)
Writing by hand	8	(4%)
Reading	3	(1.5%)
Watching TV or video/DVD	2	(1%)
Resting/sleeping	2	(1%)

5. Which activities do passengers in your car engage in? Please mark all that apply.

Listening to music	63	(22%)
Talking to others in car	62	(22.5%)
Talking on the phone	40	(14%)
Resting/sleeping	39	(13.5%)
Day dreaming	30	(10.5%)
Reading	27	(9%)
Writing by hand	8	(5%)
Watching TV or video/DVD	7	(2%)
Typing on computer	3	(1%)
Surfing the internet	1	(.5%)

6. If you had a choice, which of the following parking options would you prefer (independent of cost)?

Multi-level parking structure	43	(64%)
Surface parking lot	24	(36%)

7. Please mark which problems you feel are most severe in surface parking lots.

Hail/weather	52	(53.5%)
Crime	28	(29%)
Darkness	17	(17.5%)

8. Please mark which problems you feel are most severe in multi-level parking structures.

Locating your parked car	43	(44%)
Crime	30	(30.5%)
Darkness	25	(25.5%)

9. What uses would you appreciate having access to in a parking are? Please mark all that apply.

Restrooms	49	(30%)
Green spaces gardens	25	(16.5%)
Café/food service	25	(15.5%)
Car washing service	24	(15%)
Newspapers	18	(11%)
Meeting Space	12	(7.5%)
Internet connection for portable computers	4	(2.5%)
Playground for children	3	(2%)

10. If you have had an experience with crime in a parking area please describe below. Did it take place in a surface lot or multi-level parking structure?

1. "Things stolen from car, in a surface parking lot."
2. "My sister was grabbed from behind and dragged across a parking lot in Houston. An off duty police officer saved her. This was at night in the surface parking lot of a popular grocery store."
3. "Carjacking/armed robbery at a surface area in well lit, public place at night time."
4. "Surface parking lot, I don't go to many places that have a multi-level parking area. Someone smashed out my friend's car window and grabbed my purse. I tried to shove it under the seat to on avail."
5. "Multi-level parking structure: with most multi-level parking garages the spaces are at an angle and my car has been hit more than once from the quicker to pull in enter/ exit angled spaces."
6. "Someone keyed my car (purposefully, I think) in a surface level parking lot."
7. "Was with a friend who parked his car across the street from some apartments (surface). It was well lit and people were awake in the apartments. We were gone for 2-3 hours. He had a car alarm and the people in the apartment should have heard it. He said his car was easy to break into. But this was probably a case of the car alarm being ignored."

8. "Men exposing themselves in a multi-level parking structure."
9. "Car was broken into at a surface parking lot."

11. What is your age?

Under 25	23	(34%)
25-45	28	(42%)
46-65	14	(21%)
over 65	2	(3%)

12. What is your gender?

Female	34	(51%)
Male	33	(49%)

AS