TECTONIC AND SOCIAL INTERACTIONS THROUGH ADAPTIVE REUSE: EDMONTON'S ARLINGTON APARTMENTS

by
Corrado Agnello

Submitted in partial fulfillment of the requirements
for the degree of Master of Architecture

at
Dalhousie University
Halifax, Nova Scotia

July 2009

Your file Votre référence
ISBN: 978-0-494-50698-1
Our file Notre référence
ISBN: 978-0-494-50698-1

DALHOUSIE UNIVERSITY
SCHOOL OF ARCHITECTURE

The undersigned hereby certify that they have read a thesis entitled "Tectonic and Social Interactions through Adaptive Reuse: Edmonton's Arlington Apartments" by Corrado Agnello and recommend it for acceptance to the Faculty of Graduate Studies in partial fulfillment of the requirements for the degree of Master of Architecture.

Date: _____

_____

Terrance Galvin, supervisor

_____

Frank Palermo, advisor

_____

Deborah Gans, external examiner

DALHOUSIE UNIVERSITY

Author: Corrado Agnello

Title: Tectonic and Social Interactions through Adaptive Reuse: Edmonton's Arlington Apartments

Department: School of Architecture

Degree: Master of Architecture

Convocation: October 2009

_____

Signature of author

Date: _____

CONTENTS

ABSTRACT

This thesis investigates the tectonic and social interactions created through the adaptive reuse of the Arlington Apartments. This thesis will provide a new typology, promoting urban living at the human scale by providing walk-up, flexi-housing that is both affordable and sustainable. It addresses the tectonic interaction between the new and old architecture, creating a habitable threshold through a legible architecture. It also provides various degrees of social spaces for the tenants and the general public. This thesis serves as an example to help densify Edmonton's downtown core while providing an active streetscape.

ACKNOWLEDGEMENTS

I would like to thank all my colleagues, professors and friends for their continued support over the many years leading to my career as an architect. I would also like to thank my family, without whom I would never have made it this far. Their unwavering confidence in me helped give me the determination to keep going, even when it seemed impossible.

I would like to thank Frank Palermo for being my advisor and helping me through this thesis and Terrance Galvin for being my supervisor. We didn't always see eye to eye, but you were there when I needed you the most and you always pushed me to do better.

I would like to thank the City of Edmonton for the invaluable resources and time they provided me to help make this thesis as thorough and accurate as possible

Most importantly, I would like to thank Kristin Chrzanowski. Your support has given me the strength and confidence to do the best I could, both with this thesis and in life. I love you.

INTRODUCTION

Thresholds

> Architecture, as I see it, is the art of composing spaces in response to existing environmental and urbanistic conditions to answer a client's needs. In this way the building becomes the resolution between its inner being and the outer conditions imposed upon it. It is never solitary but is part of its setting and thus must blend in a timeless way with its surroundings yet show its own fresh presence.[1]
>
> ~Arthur Erickson

Architecture has always been an expression of culture in society. Throughout history, its primary role has remained consistent and unwavering, to provide protection and function, tailored to human culture. Beyond this, architects have used architecture to influence human experiences through various forms of interaction, socially as well as tectonically. Although architecture influences experience through interaction at the building scale, the same can be said about architecture at the urban scale. The building acts as a threshold between its internal functions and the urban realm. These various scales of social and tectonic interaction have generated many architectural responses. Each response is unique to its circumstances, therefore, careful consideration is required.

Addressing architecture through adaptive reuse requires one to analyze many conditions that typically are not present in a new building. Foremost, one must analyze the existing structure in order to determine how and where the structure shall be retained, as opposed to being removed. Often, the programme of an adaptive reuse structure is different than originally intended, therefore, it is important for the designer to re-evaluate the spatial composition of the existing structure, as well as determining if the building area and footprint are suitable for the new programme. Many well known adaptive reuse projects result from a scenario where the new programme is incompatible with the existing structure. When designed well, the result is a balanced relationship between the new and old structures. There are many circumstances where adaptive reuse projects do not take

---

1 "Design Philosophy," Arthur Erickson, http://www.arthurerickson.com/designpa.html (accessed June 7, 2009).

advantage of these tectonic interactions, thus resulting in mundane and often underwhelming developments.

Interactions, both tectonic and social, are thresholds. The degree of interaction varies depending on the programme and architectural condition. These thresholds address the user's haptic experiences and must be well designed in order to produce a successful building. While addressing an adaptive reuse project, the tectonic interaction between the new and old structure can often result in a unique experiential space. This is also true at the city scale. The threshold condition between the urban environment and the proposed development or redevelopment is critical to a city's haptic environment and directly influences the character of the place.

Thresholds are physical transitions, which provide varying degrees of interaction. Tectonic interactions occur where two tectonic elements intersect, creating a physical threshold condition in which the user can transition from one space to the next. Social interactions can vary in degree, from civic to private spaces. This threshold of interaction warrants varying architectural responses and is often associated with physical thresholds.

Urban Fabric

Understanding the surrounding urban fabric is imperative to generating a well informed and responsive design. When understanding architecture, many people neglect to consider the dimension of time. It is imperative to recognize development patterns in order to produce an insightful response. One must understand the potential of future developments, otherwise there may be an inherent disconnect which, if left unaddressed, will detract from the urban context through a lack of active frontage, the generation of wind tunnels, or the lack of natural light at street level. It is possible to alter trends in an attempt to revitalize areas, but this can prove more difficult. Much of Edmonton's downtown core has moved away from medium to high density low-rises and has instead focused on constructing high density high-rise towers. As a result, there is a lack of

active frontage on most buildings. With tall towers, and the propensity to create surface parking, there are large voids created in the urban fabric. Although the City of Edmonton has now restricted surface parking in the downtown core, it will take time to recreate an active street front. Another issue with tall towers is that larger set backs are often required, therefore creating a street frontage that is non-engaging to pedestrians and buildings that do not respond to the pedestrian scale.

It is evident in the street façade study below that newer structures tend to be larger and taller than the others. As was first promoted by the Arlington, these types of structures identify density and cost effectiveness. Unfortunately, current trends are neglecting other design principles, such as the haptic qualities of the spaces formed, the social implications of reducing street frontages to a single entrance, the tall, overcasting shadows, the wind tunnelling effect generated by tall, flat faced towers and the reduction of sightlines due to surrounding structures. All designers must understand "that the connection between architecture and context [is] highly complex and that first and foremost the relationship with other buildings [is] of prime importance."[2]

Preliminary street façade studies identify the present material culture and height conditions which occur immediately surrounding the Arlington, as well as much of Edmonton's central core. The Arlington is surrounded by ten to twenty storey high-rise towers, as well as two-to-five storey commercial and residential buildings. Immediately to the east is a four storey school, which is used as an adult learning centre. The building materials consist primarily of brick on the ground level and a glass curtain wall above. To the west of the Arlington is an eleven storey office tower, clad entirely with a glazed curtain wall. To the north, there is a four storey structure with a fifteen storey point tower in the centre. The first level of the building consists of retail space with a three storey parking garage above. The fifteen storey point tower is occupied by offices. The point tower and the retail level are both clad in glass, while the parking garage is an open air concrete structure. This lower portion is built directly to its property line, so for this reason, there are no south facing windows, only a concrete block wall. To the south of

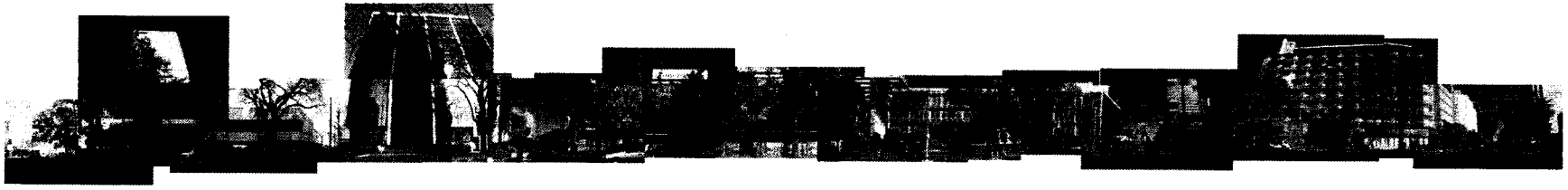
---

2 Sergio Los and Klaus Frahm, *Carlo Scarpa* (Cologne: Benedikt Taschen, 1994), 8.

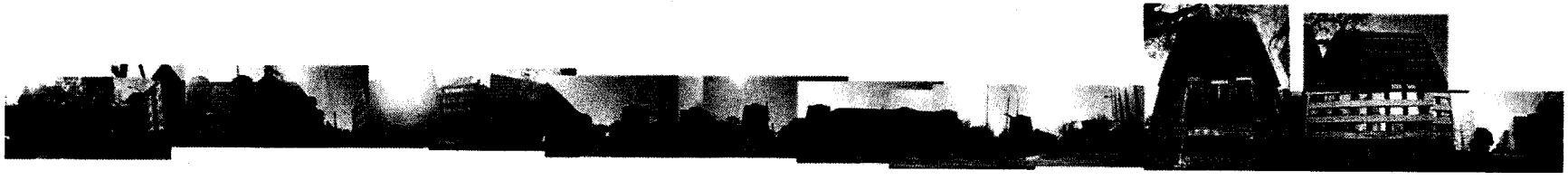
the Arlington, there is a large, one and a half storey house. This house, clad in stucco with its shingled, gabled roof, is home to a private, not-for-profit organization called the Elizabeth Fry Society. Due to the minimal height of the house and the wide street separating it from the Arlington, there is full sun exposure on the south façade of the Arlington. This house is a designated, historic property, therefore there is little chance of a new, large scale development taking its place.

Similar to many North American cities, material language is largely categorized by function. Residential uses, namely buildings five storeys or less, tend to have brick façades. These façades are predominantly solid with punch out windows and doors. In contrast, new high rise residential buildings are becoming increasingly similar to office towers in that the façades are almost entirely glazed with metal or concrete structures. Retail, although typically on the ground level, is commonly entirely glazed if part of a larger structure, otherwise, has typically been adapted from a residential building. Characteristically, public uses tend to allow for more visibility from the street, thus, serve well as glass façade structures, while private or semi-private structures tend to use less glazing to help promote privacy. This material language will later be addressed in relation to the adaptive reuse and re-design of the Arlington.

From a critical perspective, Edmonton's core lacks the transition from the haptic scale to the city scale. There are few low or mid-rise buildings, even though there are plenty of parking and vacant lots where such structures could exist. Most dense urban centres promote high density high-rise structures in order to increase density when there is no land left to develop. Edmonton has not reached a state where this is necessary, therefore, density, which promotes an active street front and natural light, is part of the focus within this thesis. Furthermore, much of Edmonton's residential district borders the downtown rather than existing as part of it. Through the adaptation of the Arlington, this thesis will attempt to promote urban living for suburban families.

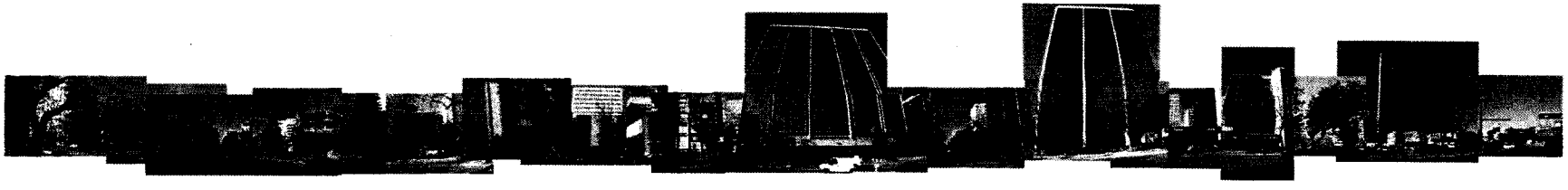


100 Avenue North



100 Avenue South

106 Street East



106 Street West

Existing streetscapes

Analyzing the material culture is an integral part of any development, especially an adaptive reuse project. The existing structure must relate to the new structure in a way that ties it back into the surrounding context, but before this can be addressed, it is important to understand the value of the existing structure.

Adaptive reuse projects can often be more costly than new build, even with the preservation and reuse of large portions of the existing structure. In part, this is due to the extra soft and hard costs associated with analyzing, documenting and addressing building problems. Quite often, existing structures require restoration prior to the new construction, which can create expensive delays. More often than not, when an existing building is damaged beyond the point of economic feasibility, the structure is torn down and a new development is implemented. Many designers would rather start new, despite the condition of the existing structure, because there tend to be fewer complications and less time is required. However, this mentality has caused many historically relevant buildings to be demolished, losing a part of our history and losing out on the opportunity to create a truly unique and remarkable structure. In certain instances, despite the cost implications, a building's cultural and architectural value outweighs the added cost and effort and must be retained. This is not to say that it must be restored to its original state, but that the opportunity must be taken to reuse its components in a way that remains true to its original existence and adapt it for the needs of today and tomorrow. It is often quite difficult to find an appropriate balance between new and old and the question often remains; how does one address the sensitive interaction created through this connection while addressing the issue of social interactions generated through this tectonic relationship? The intent of this thesis will be to analyze these connections and issues of social and tectonic interaction through the adaptive reuse of the Arlington for urban housing in the downtown core.

PRECEDENT

Carlo Scarpa: Castelvecchio

Carlo Scarpa used new structure as a complement to and a completion of the old. This method creates unique responses to varying circumstances, producing creative and interesting design solutions which are often neglected. This design process is clearly seen in one of Scarpa's more famous projects, Castelvecchio. The timeline below identifies the various additions and subtractions performed to Castelvecchio over its lifespan. Scarpa's process was to reveal the various stages of adaptation and, rather than conform to previous methods, apply a new layer to the architecture, generating a descriptive form of architecture that informs and intrigues the user.

> His museums are never merely neutral spaces into which any old works of art could be inserted; rather, they represent critical and conscious decisions, which, taking the exhibits as their starting point, complement them in a way essential to their understanding, they are-as a new museology suggests-installations. This approach to architectural composition...also provides an answer to the relationship between project and history. Scarpa employed a visual language whose effectiveness was backed up by an intrinsic historicity. His attitude to history was nothing in common with the sort of academic historicism which uses a study of the architecture of the past to exploit its themes, shapes and layouts as though it were a warehouse of 'ready-made phrases.' [3]

---

3 Los and Frahm, *Carlo Scarpa* , 36.

14thcentury Castle was built
Converted to military barracks during Napoleon's occupation of Verona

1924-1926 Converted into a museum

1956 Licisco Magagnato appointed museum director
Carlo Scarpa became project architect (3 phases over 30 years)

1958 **Phase one** "Reggia"(residence) refurbished / Porta del Morbio reopened
Staircase built in Torre del Mastio with bridge to connect to "reggia"

1959 **Phase two** Sculpture gallery reinstalled on ground floor of gallery wing
Museum entrance relocated to north-east corner of courtyard

1962 Transformation of gallery wing through excavation of commune wall moat
Demolition of the last bay of the gallery wing and Napoleonic grand staircase

1963-1964 Painting gallery floor rebuilt / New staircase designed
Remodelled courtyard into a garden / Modified east wing to house new museum offices

1964 **Phase three** Cut into the Napoleonic river wall at its juncture with the medieval north-east tower as part of the new library design

1973 Sala Avena constructed and located above the library

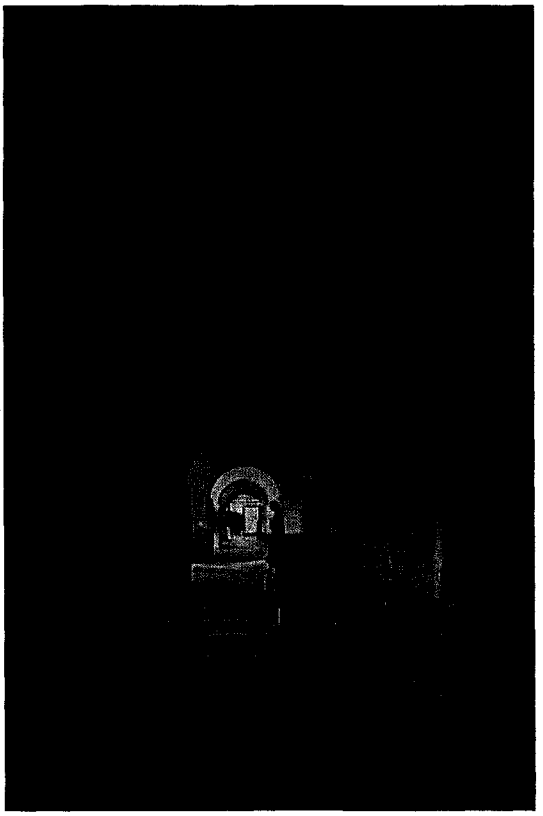
Castelvecchio timeline

Scarpa's understanding of the history of Castelvecchio allowed him to determine which parts of the structure should be amalgamated, which parts should be layered and which parts should simply be removed. An example of this layering technique can be seen at the entry to Castelvecchio. The metal lattice door is situated in behind the former arch entry. Rather than conform to the prescribed form of the arch, Scarpa understood that in creating a rectangular sliding door, one would become hyper-aware of the importance of this entrance and investigate further. Furthermore, this form acts as a screen, providing the approaching user with a threshold, while allowing for natural light to penetrate into the building.

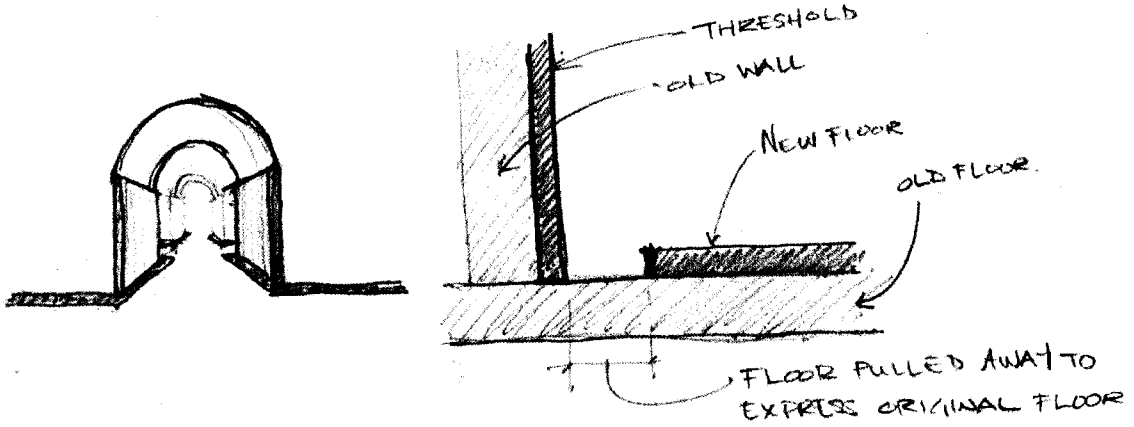
Castelvecchio entrance. "Castelvecchio Museum."

Scarpa's level of detail extends beyond the primary structure. It also includes finishes and specific detail connections. One example of his level of architectural sensitivity is evident in the flooring on the ground level. Scarpa took the threshold stones that were

originally situated on the floor at the arched entrances and stood them up to act as sentinels, framing the entrance from one room to the next. He also laid a new floor which was kept a few inches from the existing walls to identify the new architecture from the old.



Floor and sentinel details. "Today's Archidose."



Sketches of sentinel and floor details

One of Scarpa's most important architectural decisions regarding Castelvecchio came with locating the Cangrande della Scala statue. This statue is seen as a symbol of the cultural heritage of Verona. Scarpa located the statue at the critical location where it may be seen from multiple angles, as well as the exact position where the earlier addition adjoined the existing wall. Scarpa insightfully disconnects the two layers of architecture and inserted a third layer to create the connection from one to the other. This connection clearly identifies Scarpa's intention to create a tension between the previous addition and the existing wall. He does this by allowing the structure and materials to delaminate as they approach the existing structure, resulting in the new insertion touching lightly to the existing. Rather than attempt to mimic the former architecture, as was done in prior additions, Scarpa understood that creating a new layer and a new style would give the building's users a higher level of understanding, as well as an experiential architecture to embrace. Castelvecchio is critical to the culture of Verona. An adaptive reuse project that deals with historically significant buildings must show a clear understanding of their significance and should allow the user to read this understanding as well. We will now examine Edmonton's Arlington apartments.

Cangrande della Scala Statue. "Castelvecchio Museum."

THE ARLINGTON

Historic Relevance

The Arlington is situated at 106 Street and 100 Avenue, one block south of Jasper Avenue, which is one of Edmonton's largest commercial districts. Constructed in 1909 at a cost of $130,000, it was the first apartment building ever built in Edmonton. The now modest five storey building stands amidst a mix of ten-to-twenty storey high-rise towers and two-to-five storey commercial and residential buildings. It is located within walking distance to most major amenities and its proximity to public transportation allows residents to function without a vehicle.

Originally, the Arlington was home to "a broad mix of professional people. Early residents included businessmen, barristers, clerks, a physician, two music teachers, a government worker and a foreman." [4] The spatial relationship between the Arlington and the commercial/institutional district of Edmonton had largely dictated the types of occupants that chose to live there. In recent years prior to its demolition, the reputation of the Arlington and its dilapidated condition resulted in a change in occupancy. No longer did it house professionals, rather, it served as a shelter to those who might not otherwise be able to afford housing in such close proximity to the downtown core.

Throughout its history, the Arlington has served as a catalyst to help densify the downtown core. With forty-nine units, it served as a new housing model for the city of Edmonton. On November 6th, 1909, the *Saturday News* was quoted as saying that the Arlington was "Edmonton's most modern and up-to-date residential apartment." [5] With its retractable Murphy beds, china cabinets, bookcases and writing cabinets, the

---

4 "The End of Edmonton's First Apartment Building," *Real Estate Weekly*, http://www.rewedmonton.ca (accessed February 9, 2009).

5 Ibid

Arlington was filled with "funky fixtures... [and] turn-of-the-century character."[6] No expense was spared in the construction of this historic property. With its marble and hardwood floors and abundance of windows, the Arlington was one of Edmonton's most sought after locations for nearly eighty years.

After three-quarters of a century, the area surrounding the Arlington began to decay. The neighbourhood was becoming riddled with prostitution and crime and, by the early 1980's, a petition made to the City Council by two hundred Arlington residents was put forth, demanding the City deal with the growing prostitution in the area. It was during this time when a developer first proposed demolishing the Arlington, putting in its place a fifteen storey building. This proposal was rejected by the City of Edmonton and the presence and character of the Arlington stood for another 30 years.

The Arlington has since suffered two fires, one in 1990 and the other in 2005. Enduring three years of seasonal damage and years of neglect, the building has suffered severe structural damage. This, coupled with the cost of providing parking beneath the existing structure while preserving the building envelope, has resulted in the City of Edmonton allowing the building to be demolished, keeping only the front entrance arch. Originally, the City provided the Arlington owner a grant for $522,000[7] to restore three of the façades as part of the new development, however, the cost to excavate beneath the structure to facilitate parking for the new condominium proved to be overly expensive.[8]

Through the images below, one can see the Arlington in the context of its surroundings. The first image, taken in 1919, identifies the Arlington as the most dominant building in the immediate area. The second image shows the development of the surrounding fabric in relation to the Arlington, while the subsequent image identifies the state of the Arlington following the fire in 2005, prior to its demolition in late December of 2008.

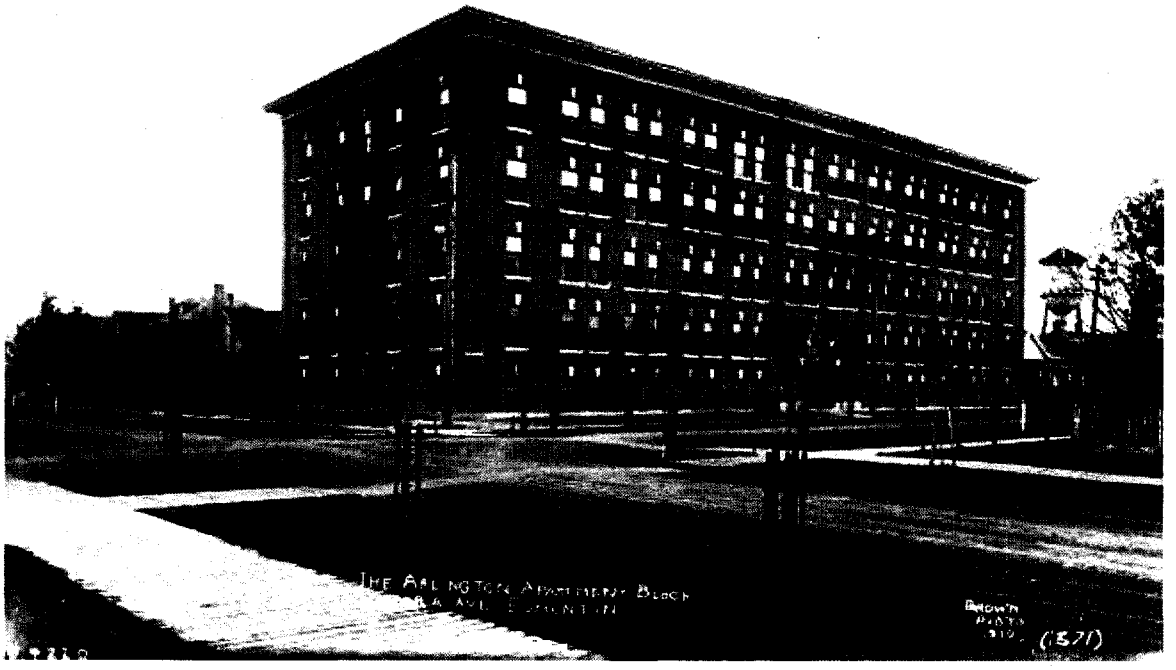
---

6 Ibid

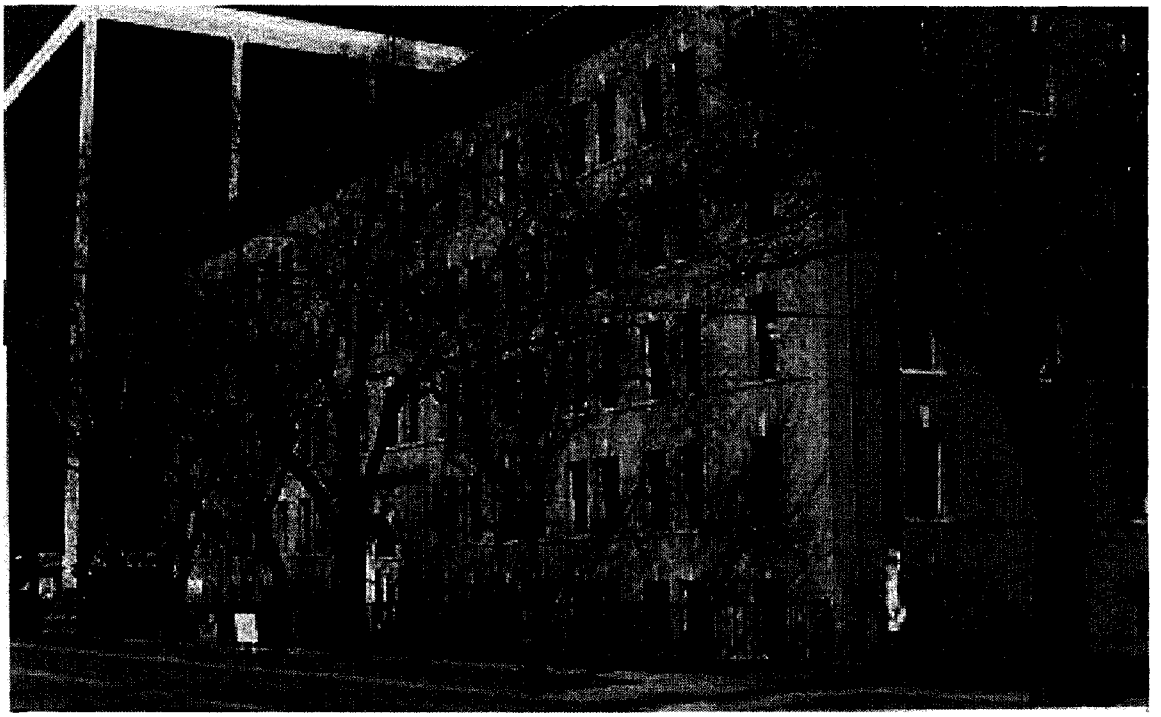
7 Susan Ruttan, "Arlington may yet rise to 20-storey condo," *Edmonton Journal*, February 17, 2007.

8 Lesley Collins, Heritage Planner, City of Edmonton. Email communication (November 7, 2008).

For the purpose of this thesis, I have assumed that the Arlington remains in its erect, yet fire damaged state.



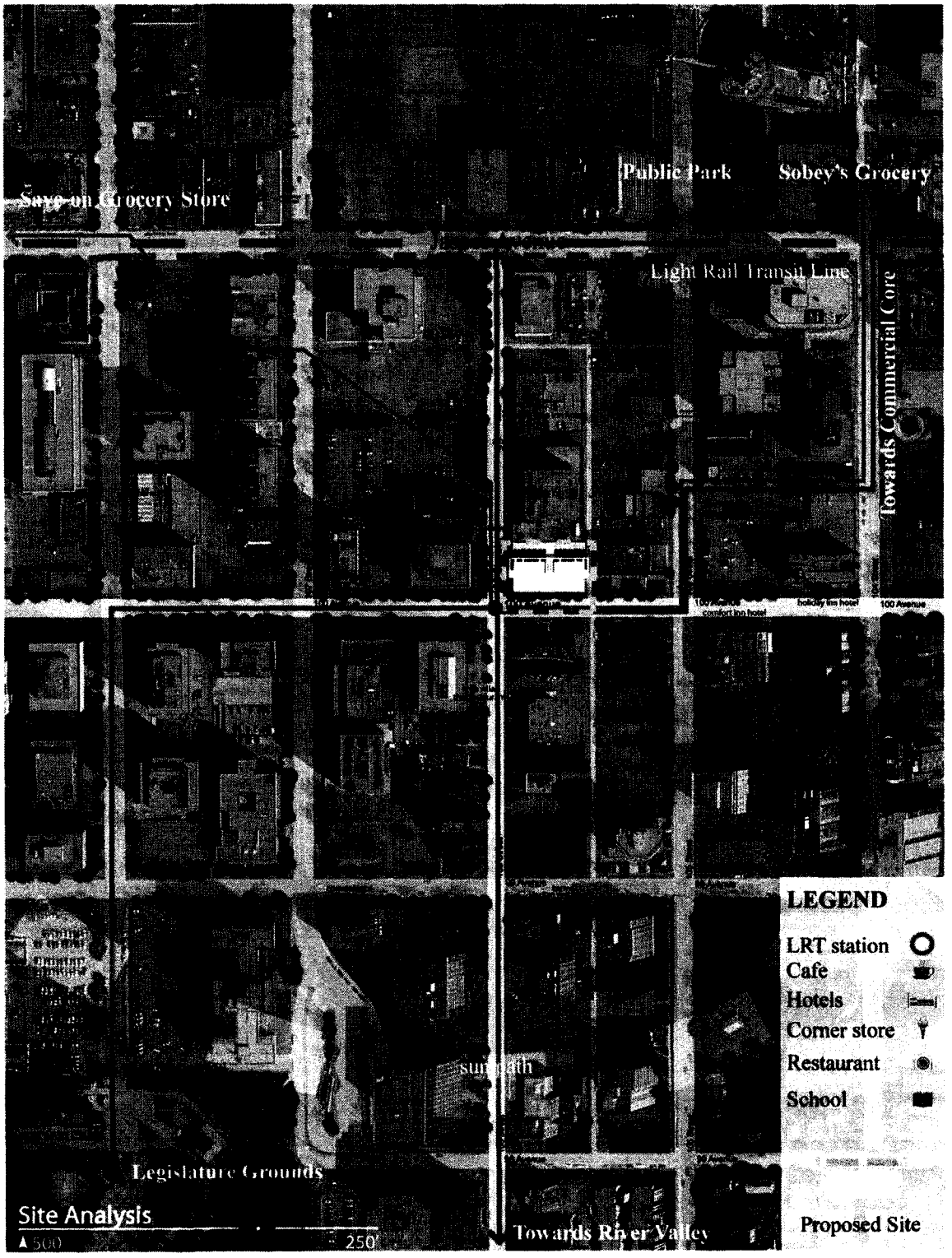
Arlington Apartment. Photo taken in 1919. Provided by Lesley Collins, Heritage Planner.



Arlington Apartment, Southeast corner. Provided by Lesley Collins, Heritage Planner. City of Edmonton

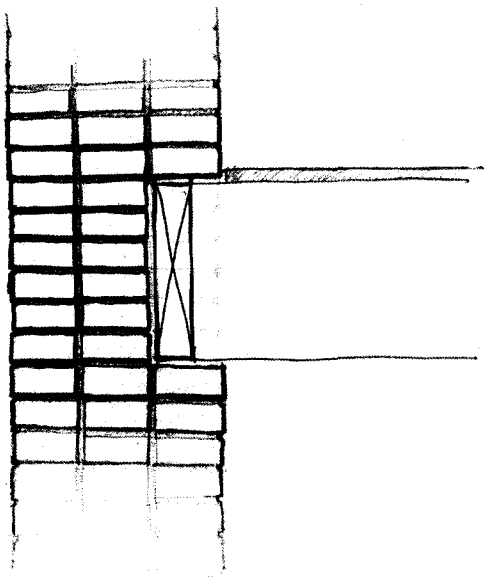
Arlington Apartment. Photo taken September 29, 2008. "Historic Downtown Apartment Finally gets its Demolition Order."

In order to properly implement an adaptive reuse project, it is essential to work at multiple scales. Quite often, individuals see an adaptive reuse project as synonymous with heritage restoration, however, this is not necessarily the case. The designer must implement architectural practices associated with new design projects in order to generate an insightful solution. Adapting an existing building, especially one that has stood for as long as the Arlington, requires studies ranging from detailed connections to street façades. These studies will inform decisions made by the designer and will produce a more astute solution that speaks to its surrounding urban fabric.



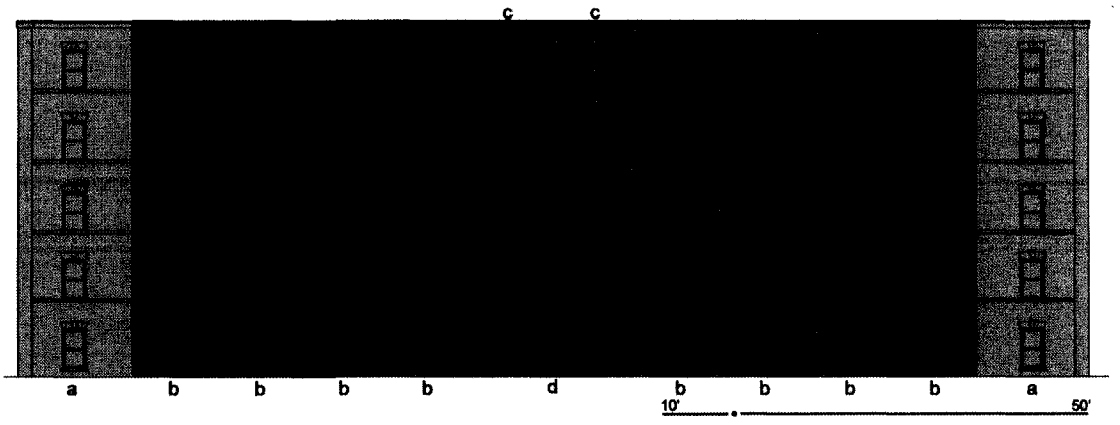
Site analysis

The sketch below identifies how the original floors would have been connected to the structural wall. Through this diagram, I have been able to develop a detail connection that will respond to this former connection with a contemporary solution that will be addressed later within this thesis.



Existing wood floor bearing on triple course brick wall (Prior to the fire)

The diagram below identifies the existing architectural rhythm. It is clear that the rhythm is symmetrical and follows a traditional grid system.



Existing south elevation: Architectural rhythm

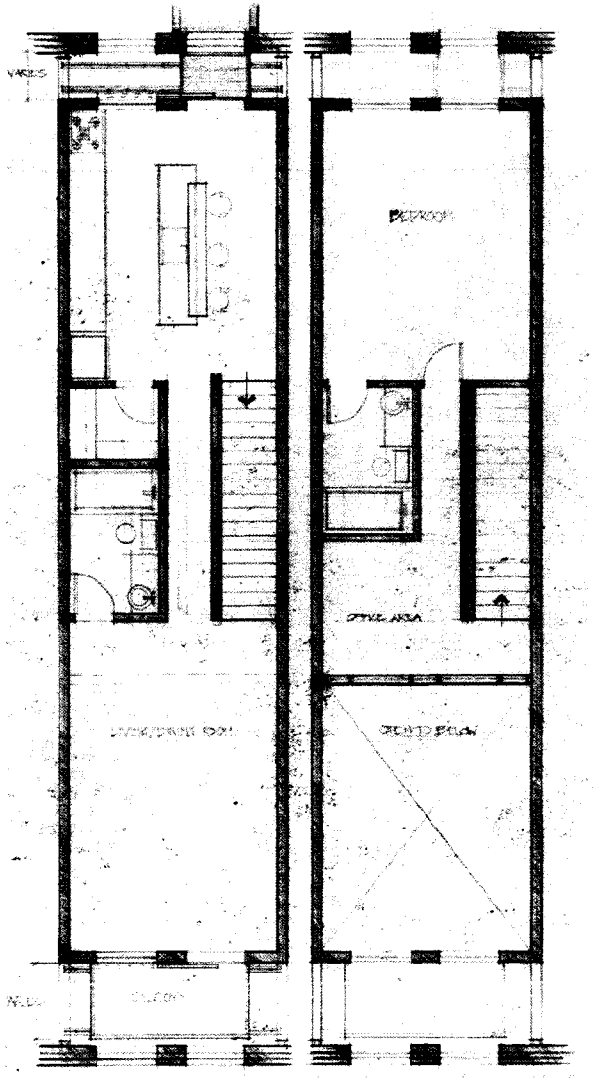
Existing Conditions

Analysis of the Arlington identifies the existing structure to be triple course, load bearing, masonry walls with post and beam wood structures that are supported largely by the masonry bearing walls. After the fire, the only structure that remained salvageable was the exterior masonry walls. The internal structure is to be removed and a new building envelope will be inserted. Tectonically, the new structure will rely on the existing three course brick wall as load bearing, allowing all partition walls to be removed or adapted for any future intentions. The structural grid will be a direct result of the existing walls and their existing window locations. The unit widths are designed on a twelve foot grid and utilize one double window opening in the façade.

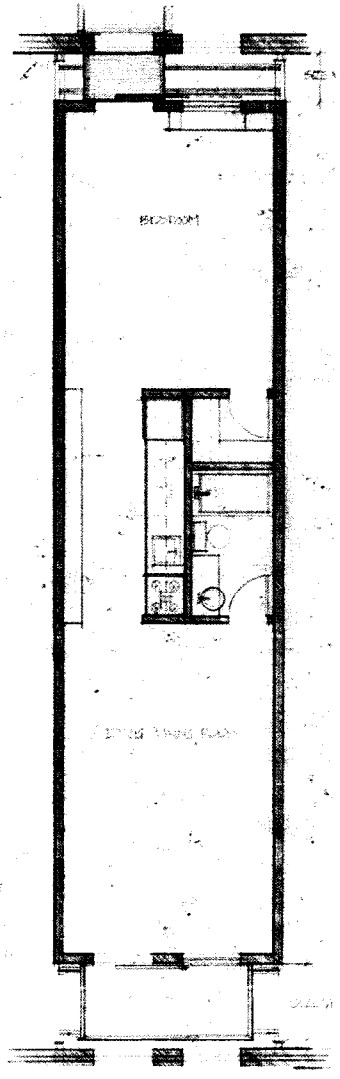
Originally, the Arlington suites were serviced by a double-loaded corridor located in the centre of the building, running east to west. When it was originally constructed, there were no other tall buildings in the vicinity, therefore, tenants had unobstructed views in all directions. Since its construction, many tall buildings have been built and, subsequently, the entire north façade now faces a solid block wall. Although a new structure is being proposed to the north of the Arlington, it was more important to provide every unit with south light, while maintaining views to the river valley. For this reason, each unit is entered from the north and runs the entire depth of the existing structure.

DESIGN RESPONSE

Although originally housing forty-nine suites, these units were quite modest in size. In the design redevelopment of this thesis, the Arlington has become home to four bachelor units, four one-bedroom units, eight two-bedroom units and four three-bedroom units. This balanced assortment of units promotes a mixed culture of tenants, ranging from single business type tenants, to full families. Below are the typical unit configurations. Although no two units are identical because of their vertical alignment, the basic layout remains the same.

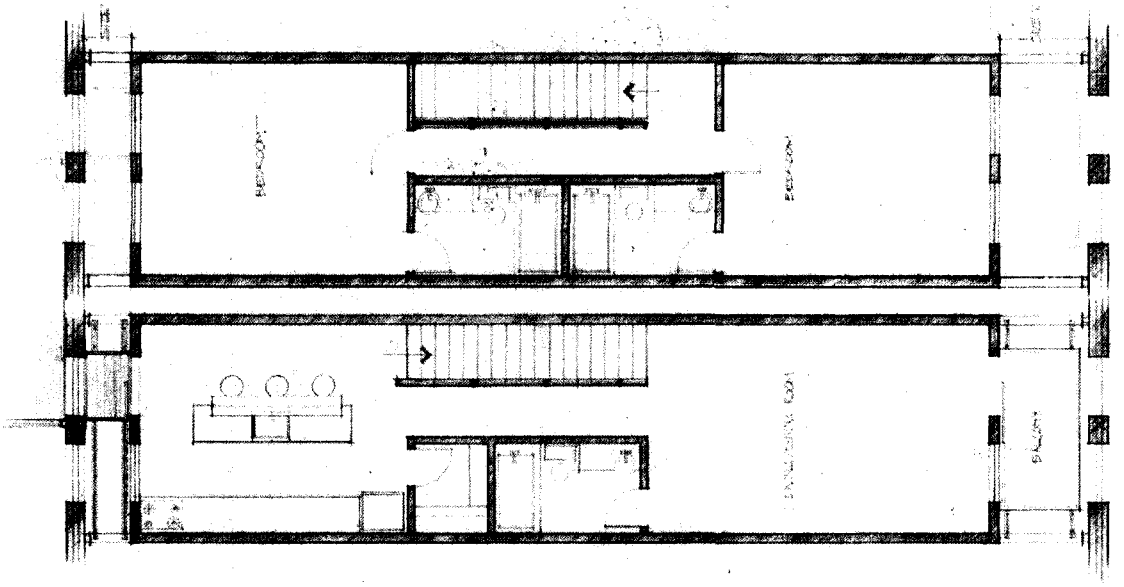


One bedroom unit

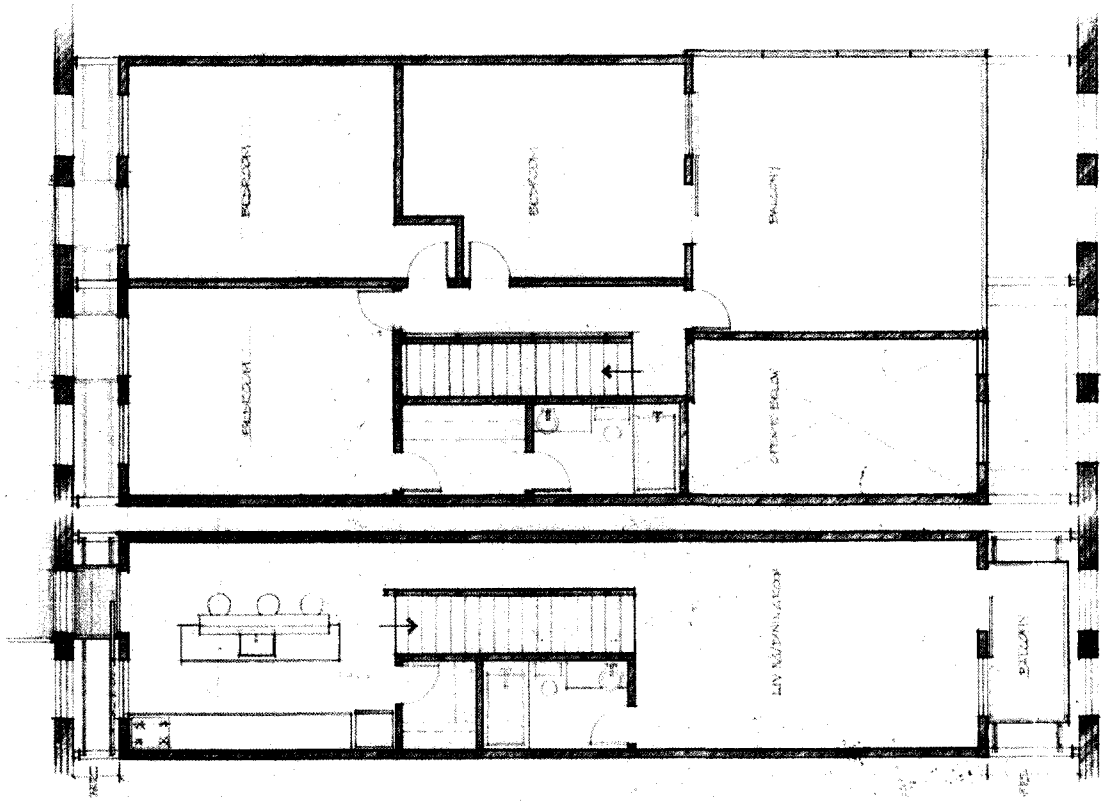


Bachelor unit

Typical unit layouts

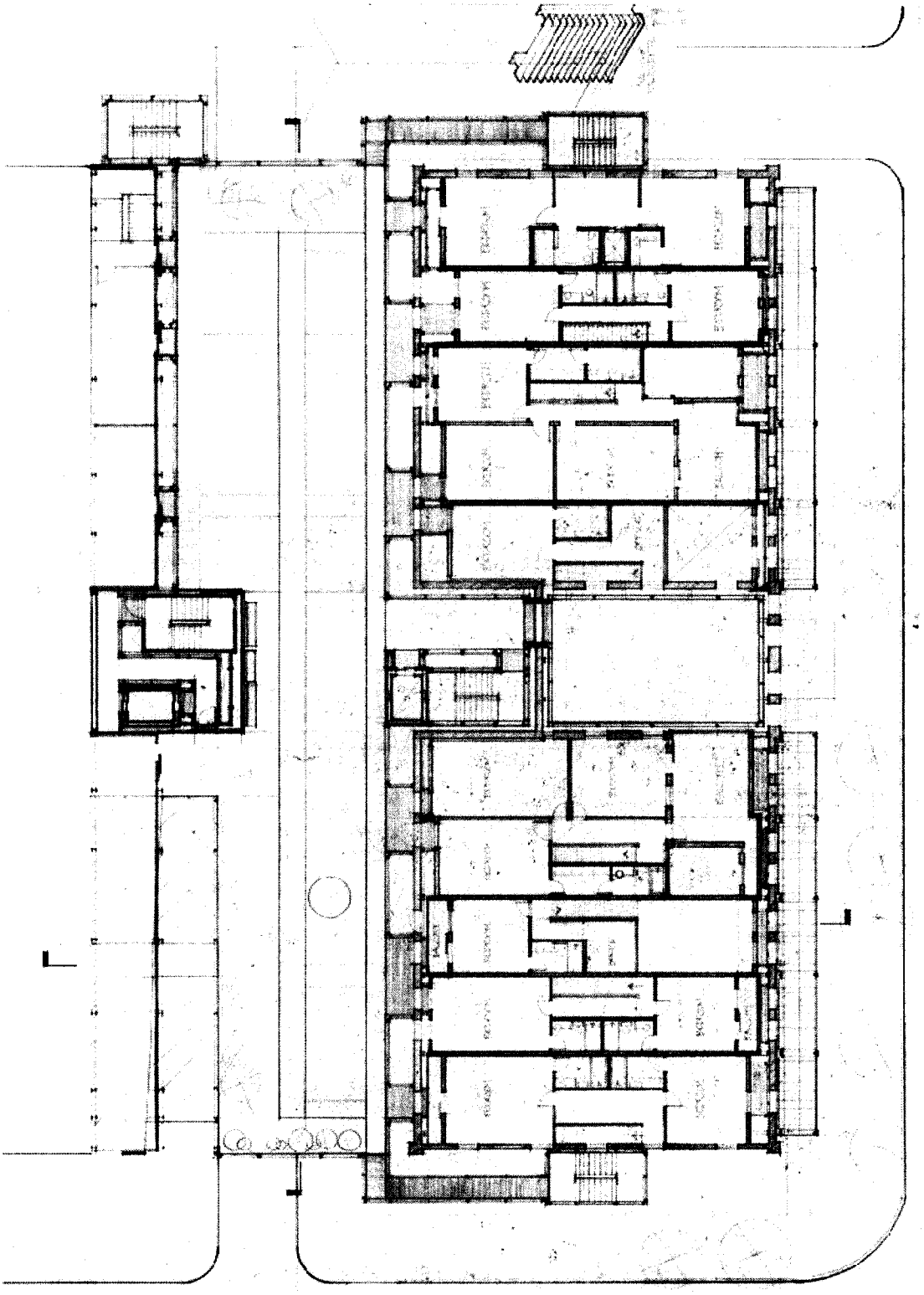


Two bedroom unit

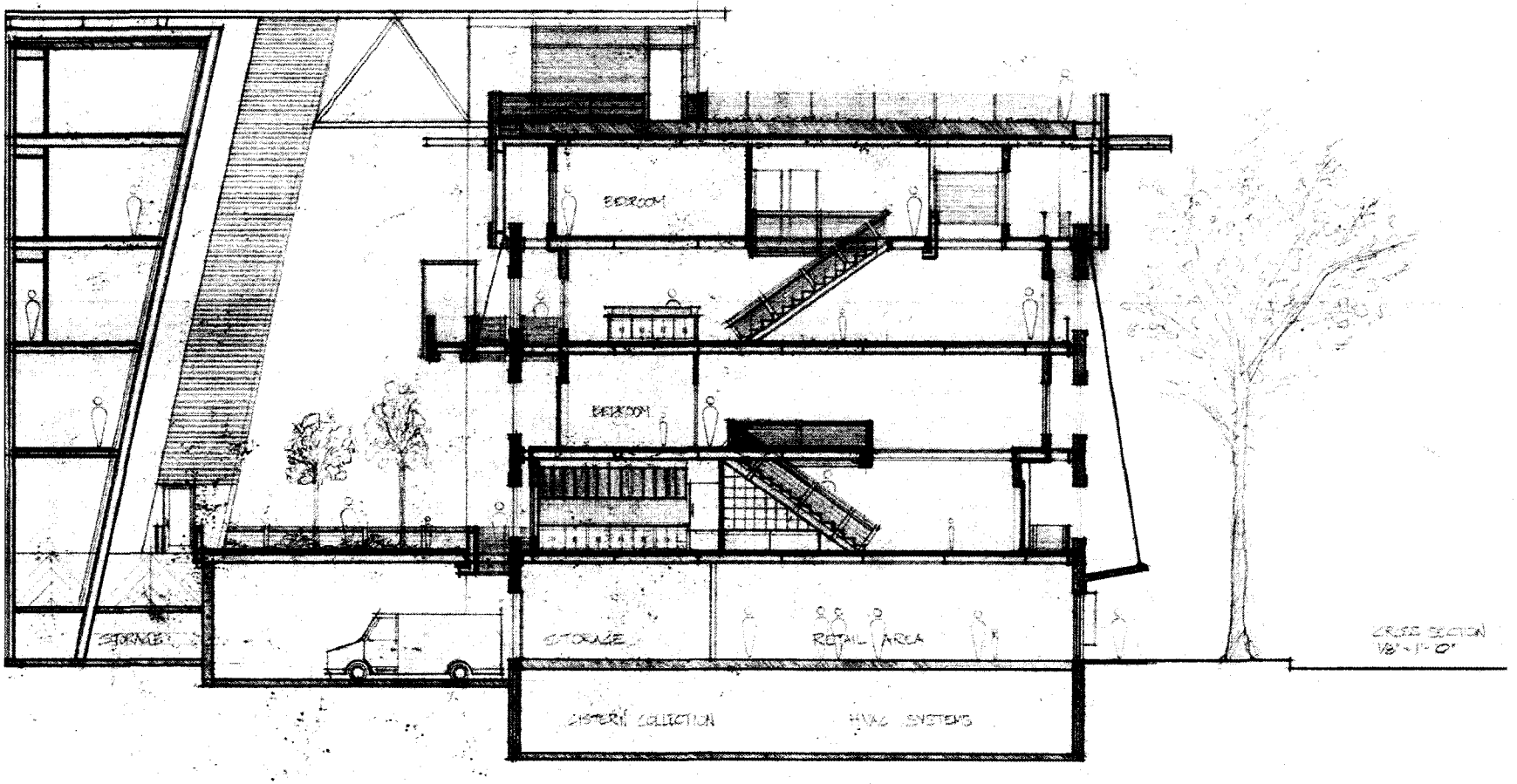


Three bedroom unit

As illustrated above, the units are designed to take advantage of the existing building depth, creating a double orientation, while allowing for a more privatized front entrance on the north side of the Arlington. This design was partially a response to the site conditions, so that no units had a view only of the back building, but also to allow for natural lighting from both aspects, better natural circulation and as a response to the existing façade. The internal unit organization places all the major services at the centre where the least amount of light would be. Generally, public spaces, such as the living room and dining room, face south onto the street, while private spaces, such as the bedrooms, face north into the forecourt. This will give the tenants full sunlight on the south side during the day and quiet privacy in the evenings on the north. In all instances, other than the bachelor units, the units are double height and utilize an internal vertical circulation. All units are capable of being converted to be wheelchair accessible, as identified in the plan below. The interior finishes are minimal, with concrete floors, exposed metal decking and open web steel joists, allowing for personalization and adaptability, as well as lowering the purchasing cost. Also, without dry wall on the ceiling, the units are able to use their full nine foot high ceilings and, with their large windows, are able to allow in large amounts of light, creating bright and open spaces.



Second floor plan



Transverse section

Adaptive Reuse Strategy

The tension between the new and old structure will be created by layering the architecture in different planes. The social interactions created through this design are directly related to the physical structure; private spaces are pulled back from the existing envelope and retreat into the existing shell, while the public spaces are outside of the existing envelope. The tension is created at the connection points where the new structure meets the old. These connections will be expressed through careful detailing and will remain visible to all the Arlington residents in order to provide a visual logic between the new and old.

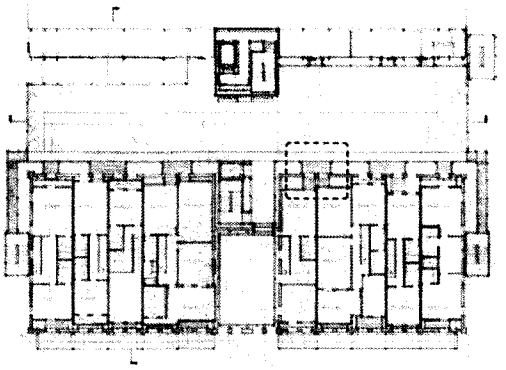
> You see how the building retains its identity in time: it's a basic principle... I wanted to preserve the originality, the character of every room, but I didn't want to use the wooden beams of the earlier restoration. Since the rooms were square, I set a paired steel beam to support the point where the two reinforced concrete beams crossed, so indicating the main lines of the building's formal structure. Where they crossed the importance of that square was emphasized because of the crossing of the two beams in the center implies the pillar which helps to define the square. This is the visual logic I wanted to use as a frame of reference. The way the beams were made also brings out the visual logic, but only in the details...The new joints reveal the structure of the element and the new functions.[9]
>
> ~ Carlo Scarpa

The culmination of this interaction will create an experiential space that the tenants will be able to inhabit at various scales. Each unit will have its own individual balconies that exist as a pocket between the new and old structure and, although this space is private in that there are no physical connections to the adjacent units, it is semi-private due to the visual connections formed with other building tenants while occupying the space. On the north side of the Arlington, every two units aside from the end units, share an entrance. This decision was made in order to increase the social interaction between the residents. This semi-public interaction promotes socialization between residents. Once the tenants pass the threshold of the existing structure, they once again find themselves in a semi-private pocket situated between the existing brick wall and the new building envelope

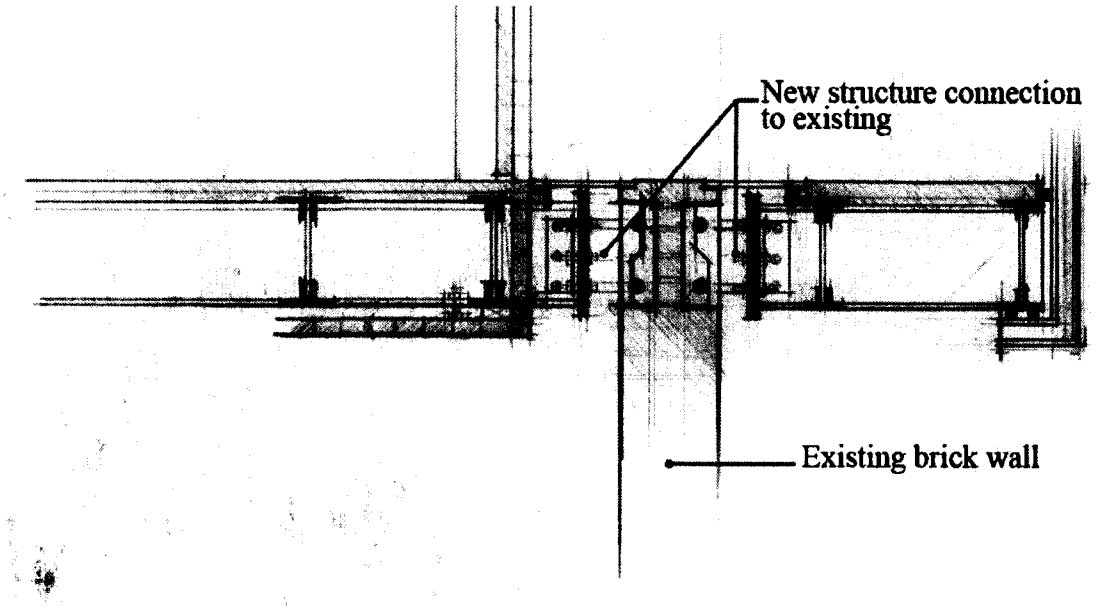
---

[9] Carlo Scarpa, *Carlo Scarpa, Architect: Intervening with History* (Montreal: Canadian Centre for Architecture, 1999), 67.

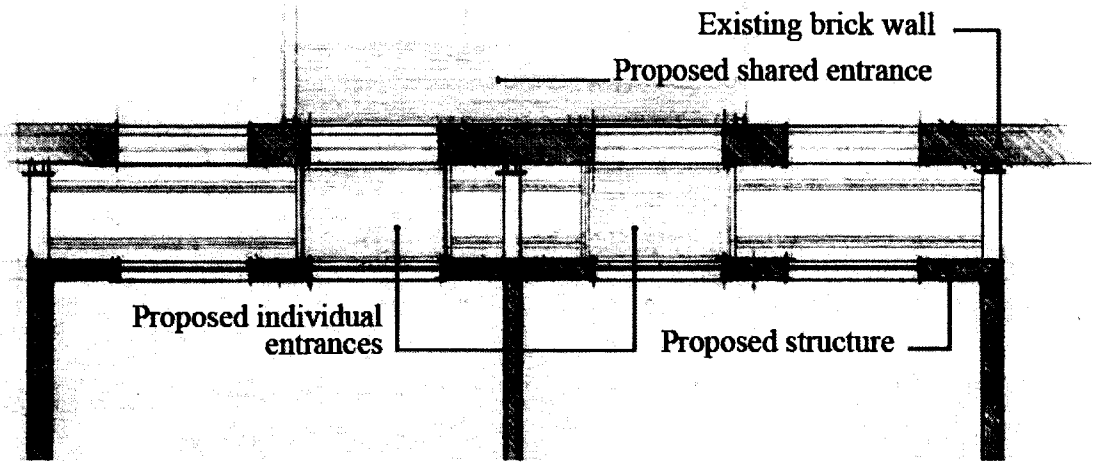
that exists within it. This space is similar to the balconies on the south side of the building.



Key Plan



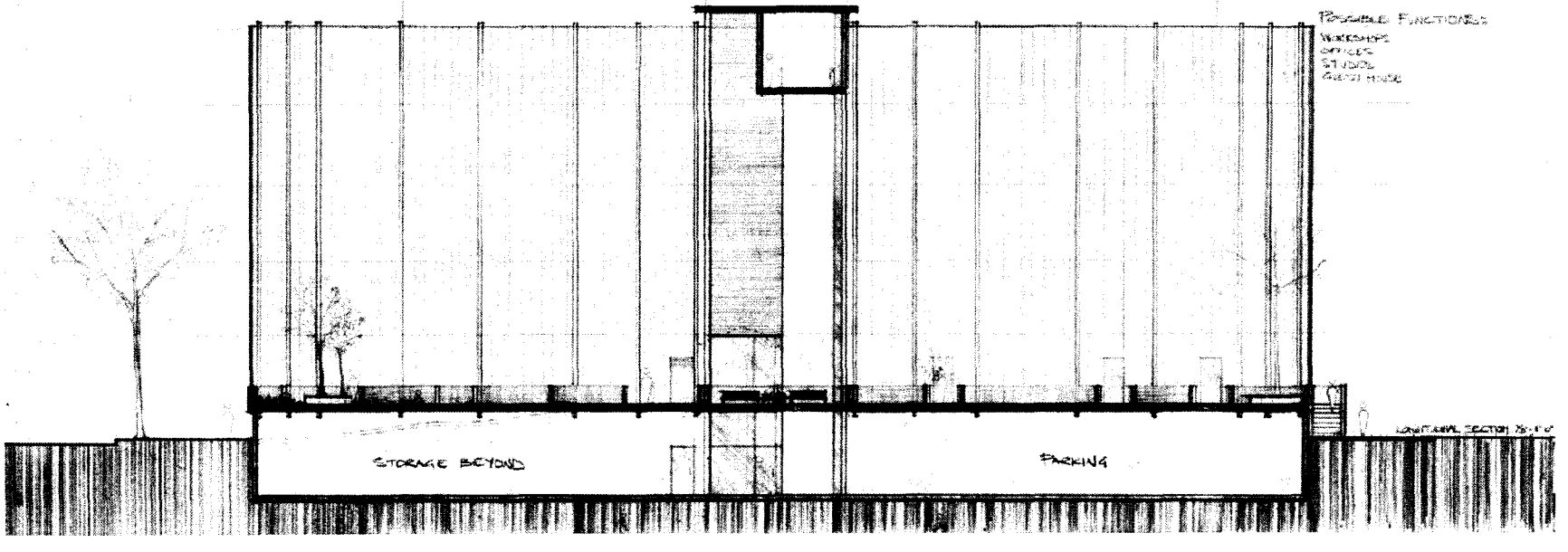
Section through entrance



Plan of unit entrances

These threshold conditions create habitable spaces that allow residents to read the architectural language of the new structure and understand the tectonic interaction that exists.

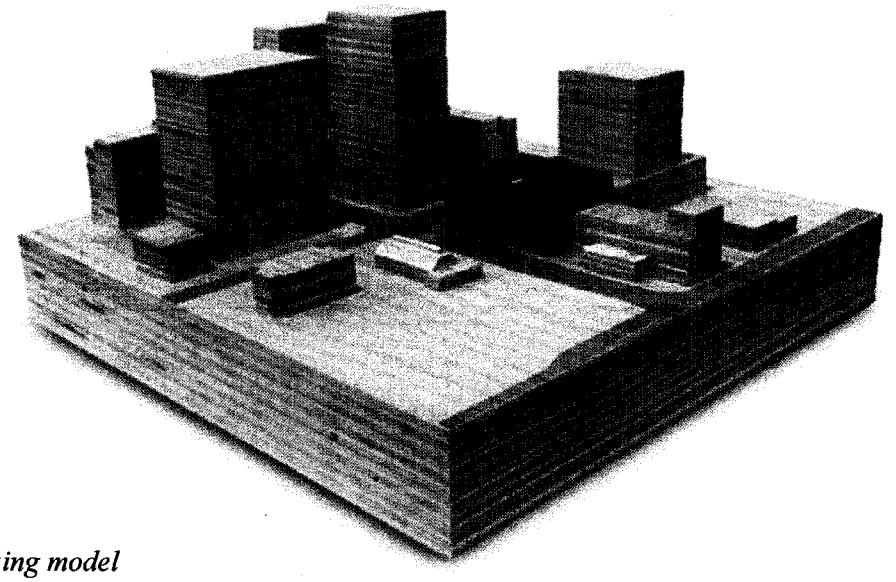
This social interaction occurs at various scales. At the larger scale, the semi-public interactions are shared by the residents at two separate locations within the existing building structure. First, the shared exterior, hardscaped, located in the centre of the building allows the tenants a place to hold events, such as movie nights and other public activities. When not used for such events, this space can be used freely by the tenants as a place to read a book or a place for their children to play safely. This space can also be rented out by tenants for private functions. This community space is designed to promote interaction between the residents. The second shared space is the garden, located on the roof of the Arlington. This garden is divided into two halves. Each section is accessible via the elevator and building stairs and is accessible to all building tenants. This shared garden space is designed to encourage cooperation and communal assistance, while providing a place for residents to grow their own fruits and vegetables, beyond the space of their balcony. On the north side of the Arlington will be a public space that is accessible to the residents and general public. This public area will be a mixed, hardscaped and softscaped area, compartmentalizing it into separate spaces to allow for multiple uses. This space is used as a forecourt to the Arlington and acts as a front yard, giving the tenants a sense of suburban environment in an urban context. This space is overlooked by both the Arlington tenants and those utilizing the north tower, therefore, creating a safe, pedestrian environment. The public court is raised half a storey, allowing for commercial servicing on the first floor of the Arlington as well as garbage collection and limited parking for the residents of both buildings. Due to the walkability of the site, close proximity to most major amenities and adjacent parking lots, the need for vehicular parking is limited.



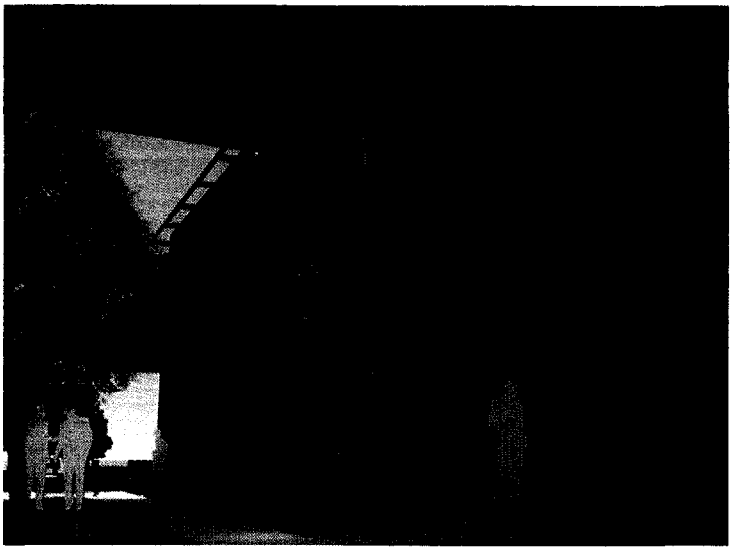
Longitudinal section

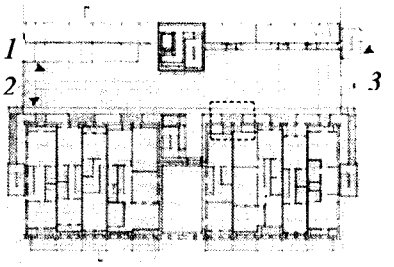
Design Studies

Immediate site analysis

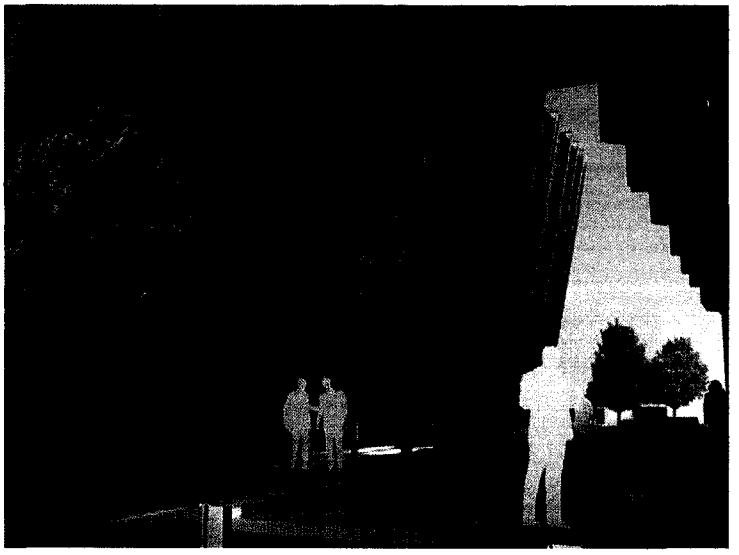


Site massing model





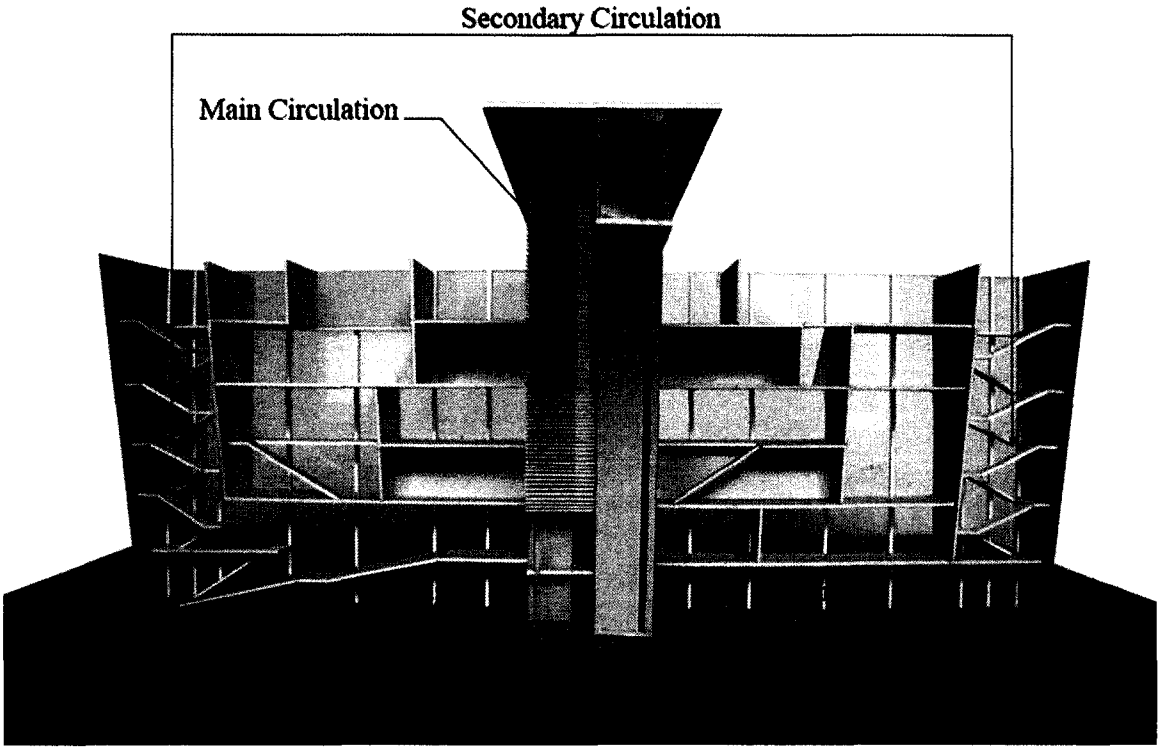
View 1



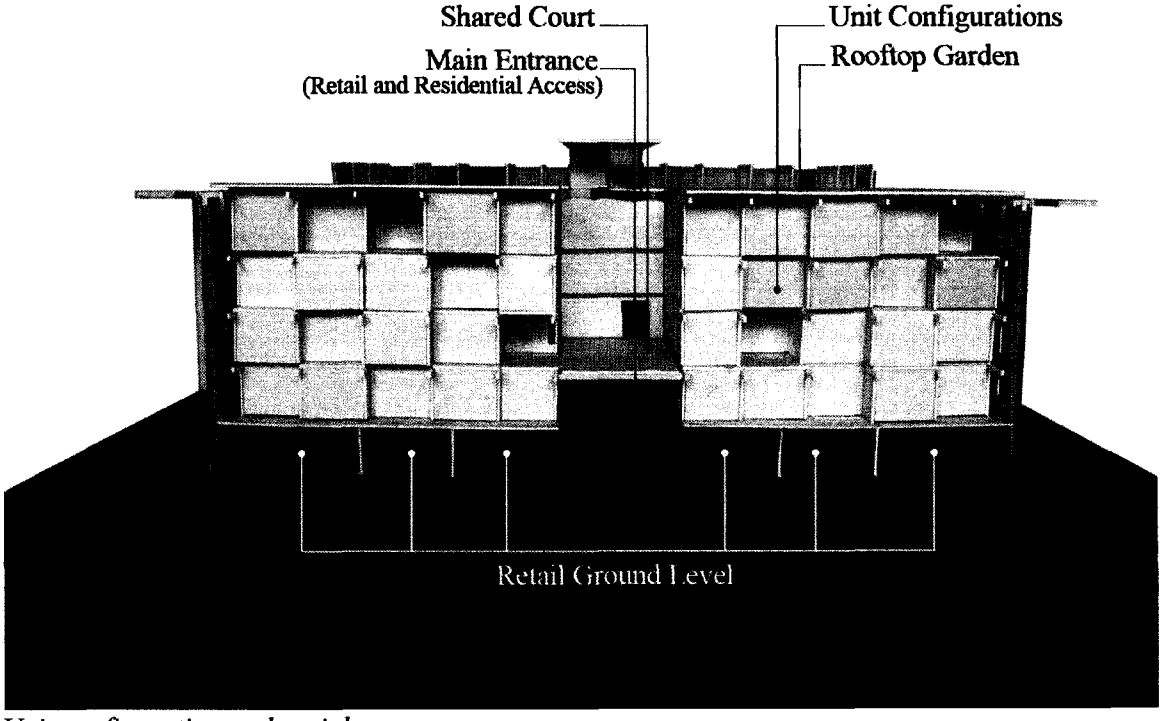
View 2

View 3

Renderings through forecourt



North building: Possible configuration



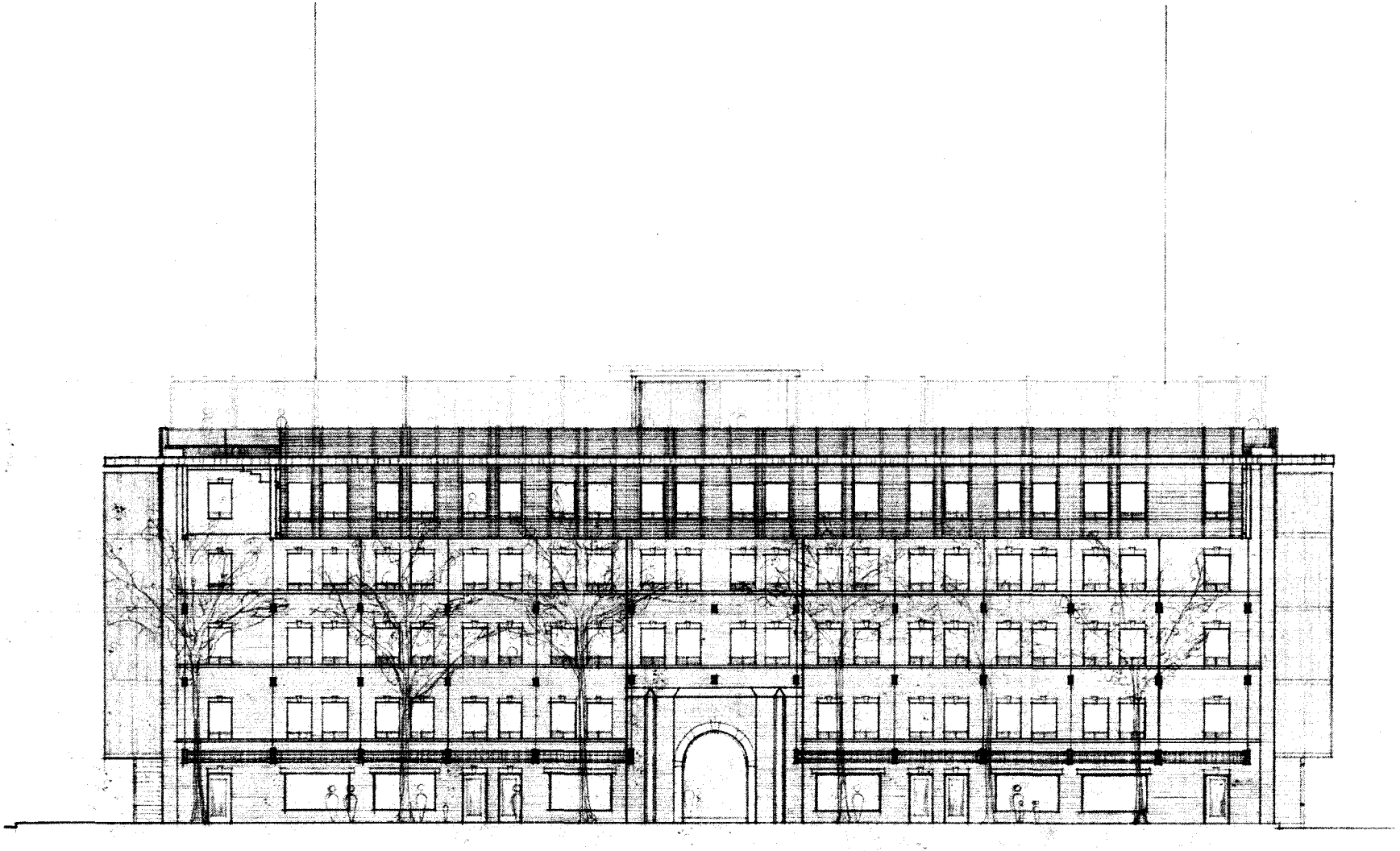
Unit configuration and social spaces

The new development on the north side of the site is a reflective glass structure. This space is dynamic in that its function can change. These spaces can be bought and used for whatever function is required by the tenants of the Arlington. These units are not allocated to the units in the Arlington, therefore it is possible for one tenant to purchase multiple units to adapt to his or her needs. These spaces can be used as home offices, workshops, guest houses, storage spaces or can be rented out as a source of income. The north building has an independent elevator and stair circulation, allowing the spaces to feel separate from the Arlington while remaining programmatically and physically linked. In section, it becomes evident that the south facing façade is angled in order to utilize the winter sunlight and increase the amount of natural light received to the north side of the Arlington and the adjacent public court, while diffusing direct sunlight through textured glass surfaces, which will also provide varying levels of privacy for the tenants of this building. While providing natural light, this building also serves as a dynamic backdrop for the Arlington tenants, rather than the blank, block wall that is currently in place. All circulation for the north building is internal, allowing for maximum surface reflection of natural light, while all circulation is external on the Arlington due to its public nature.

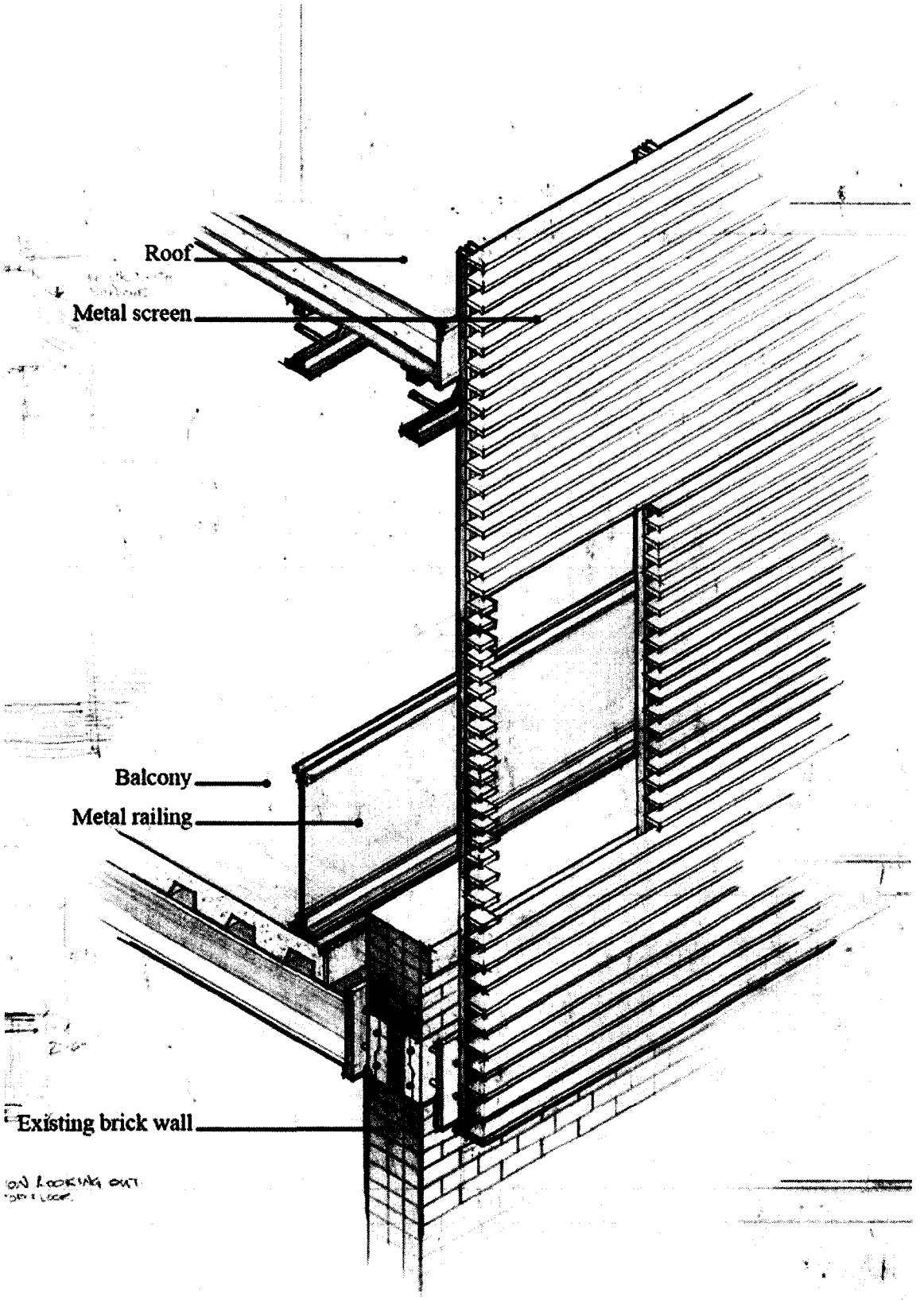
Connections

Adaptive reuse requires a very different form of detailing. An integral part of the Arlington redevelopment is the way connections are made, both from new structure meeting old and new structure meeting new. The architectural language of the new construction emphasizes these connections, therefore, it is critical to the success of the project for these connections to be detailed correctly. One primary concern to address with this redesign is the structure associated with the existing masonry wall. Due to the fire, parts of the brick wall were destroyed, while other parts were removed due to safety. There are a number of solutions to address this situation. One solution would be to rebuild the brick the way it was, attempting to make the new brick match that of the existing. Another might be to use a different material or different type of brick,

rebuilding the façade, yet creating a contrast between the new and old. This design has focused on the threshold condition of inhabiting the space where the new and old structures meet by ensuring they do not exist within the same planes, therefore, the new interactions inhabit a different plane than the existing. Instead of rebuilding the bricks, a new layer is clipped on to the outside of the brick wall. This metal screen recalls the bricks that once existed. Half inch thick by three-and-a-half inch wide steel members run horizontally, spaced every two-and-a-half inches apart vertically. Furthermore, because this screen is clipped on to the outside of the brick wall, one must address the issue of flashing the top course of the existing brick. The solution in this case is to use a half inch thick steel plate that will run the perimeter of the existing brick wall, while allowing for metal inserts where the stone window sills have been destroyed or removed as a result of the fire. These inserts will appear to float away from the brick wall, but will lap down on the inside of the brick, effectively covering one course.

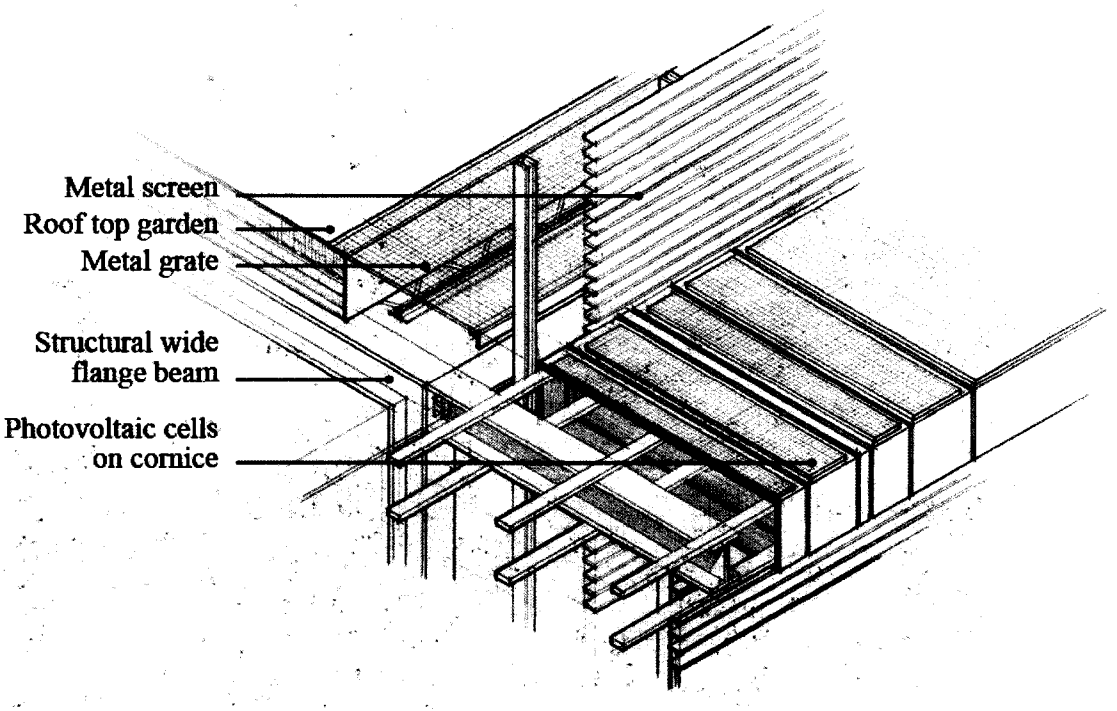


Proposed south elevation



Axonometric of screen connection: Exterior façade

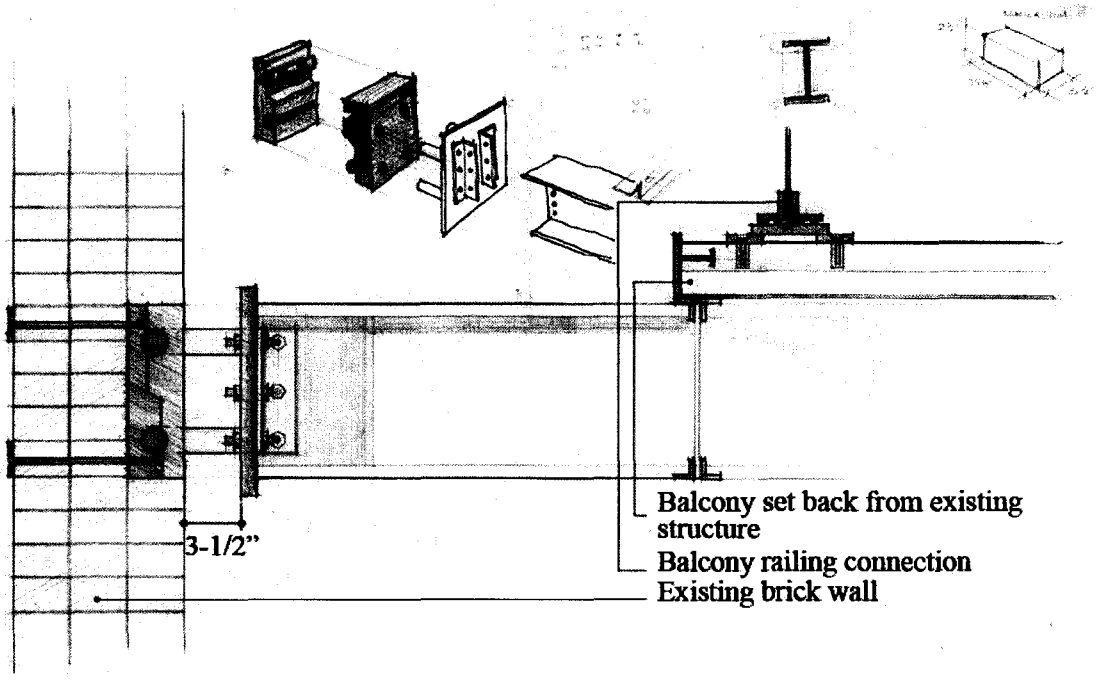
The screen also acts as a railing on the roof of the Arlington, with the cornice projecting through it. The cornice is a reflection of the previous cornice which was destroyed in the fire. In order to properly detail the connection between the roof, the screen and the existing wall, it is essential to determine the hierarchy. The screen is clipped onto the exterior of the existing brick wall, as is the cornice, because they exist on the outside of the existing structure. If the roof were to contact the screen and cornice monolithically, it would confuse the planar logic, therefore, a detail was devised in order to allow the roof to exist independently from the screen and cornice. This detail takes advantage of this space to help promote passive ventilation through the metal grate which connects these two components as well as allows for light penetration from above.



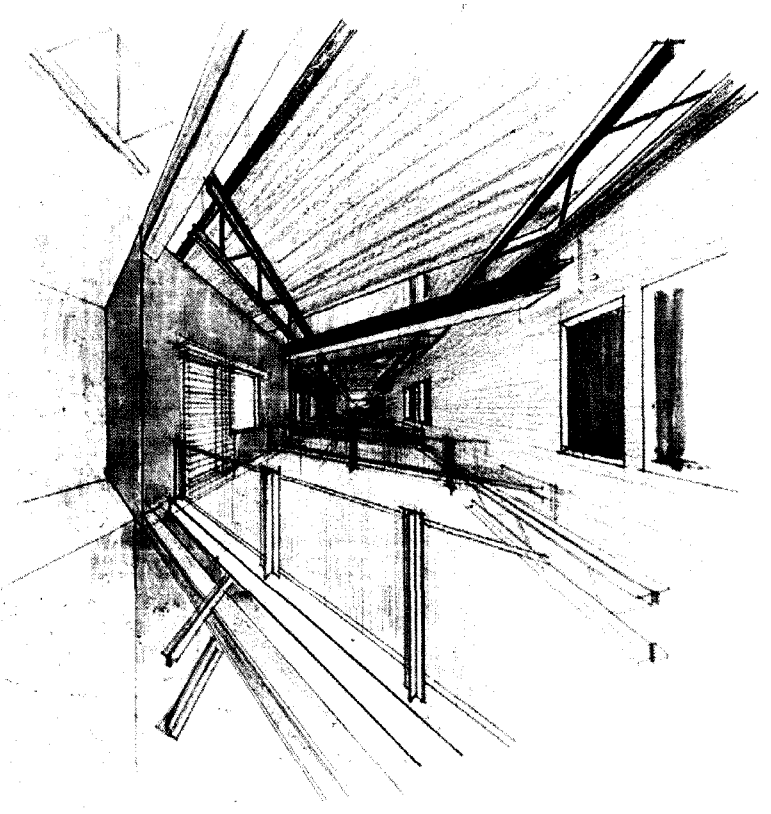
Axonometric of roof, cornice and screen connection

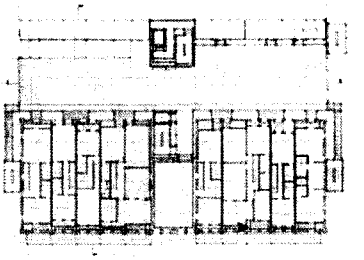
At the points where the new wide flange beam will connect with the existing triple course brick wall, careful consideration was made as to how to address this connection. Rather than simply lay the wide flange beam on the bearing surface once used for supporting the wood floor joists, a new connection joint would be designed in order to

emphasize the point of contact. This complex connection will remain visible to the inhabitants and is symbolic of the tectonics of the new structure with the old.



Detail connection of new to existing structure

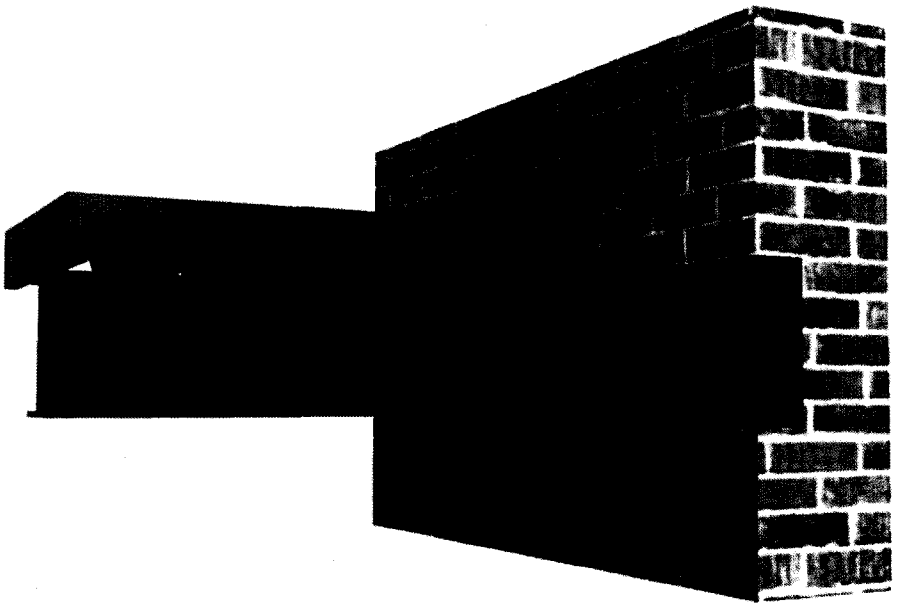




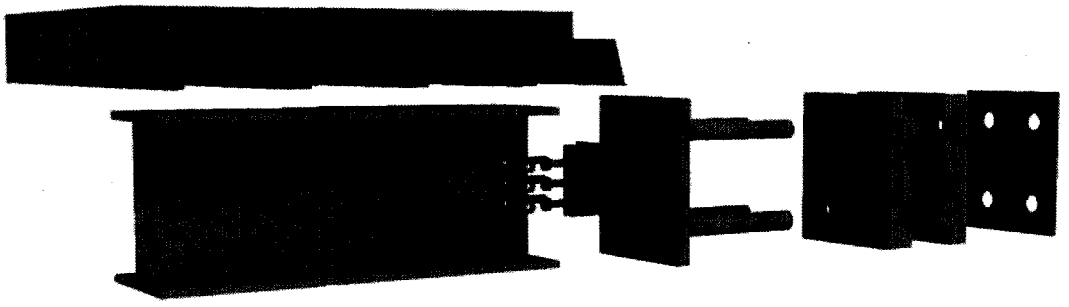
Key plan

Perspective of balcony condition between new and existing structure

The images below show how the metal insert fits into the brick cavity and emphasizes the delamination from the existing structure. This approach reinforces the tension created through the tectonic connection of the brick wall and the new metal structure. This connection is completely visible to the inhabitants in order to create a legible architectural language.



Structural connection to existing brick wall



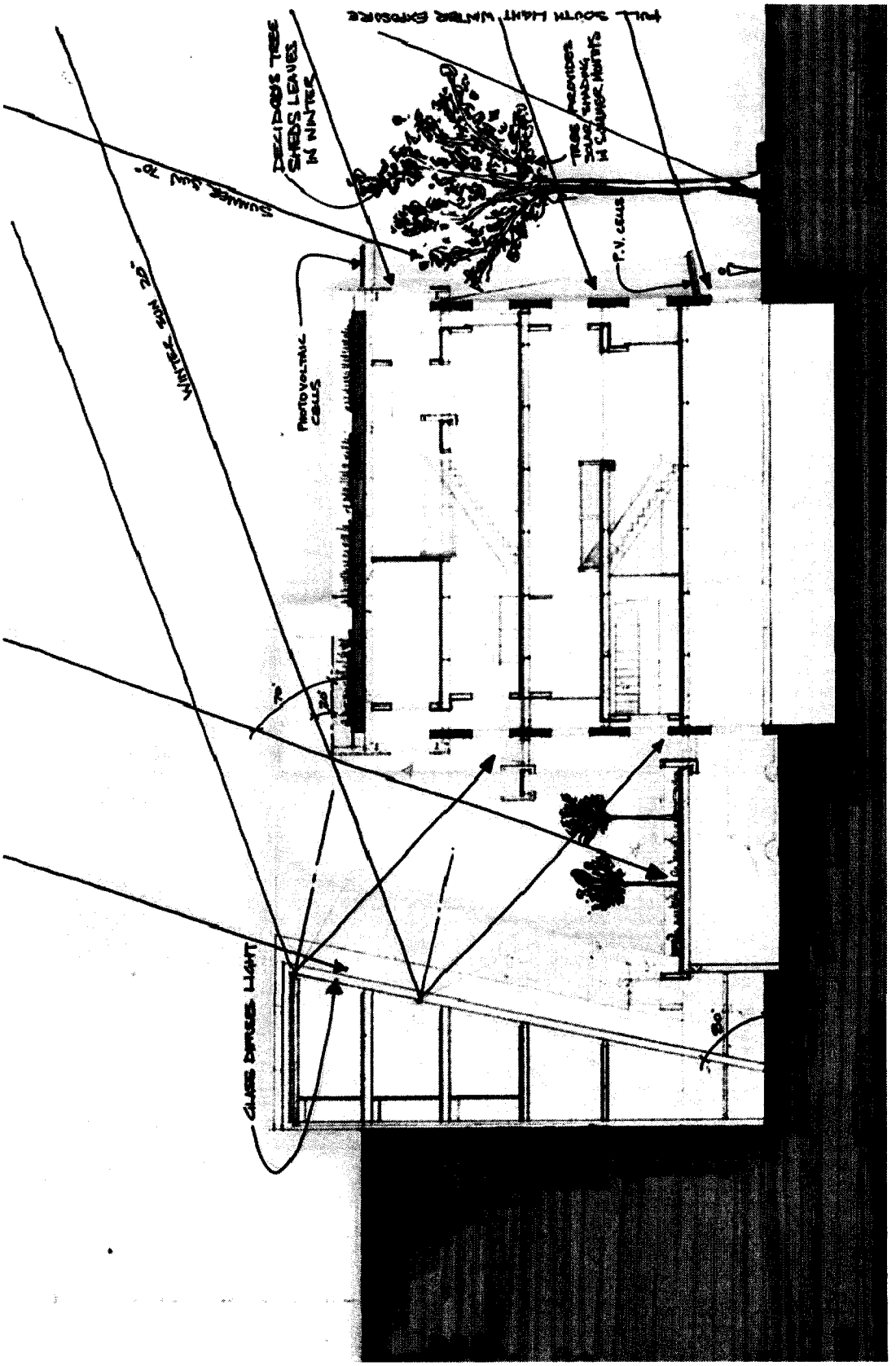
Exploded diagram of structural detail connection

Environmental Sustainability

Many decisions were made during the redesign of the Arlington in order to create an environmentally sustainable building. Most systems are passive and require little-to-no additional costs, while providing a more cost-efficient building.

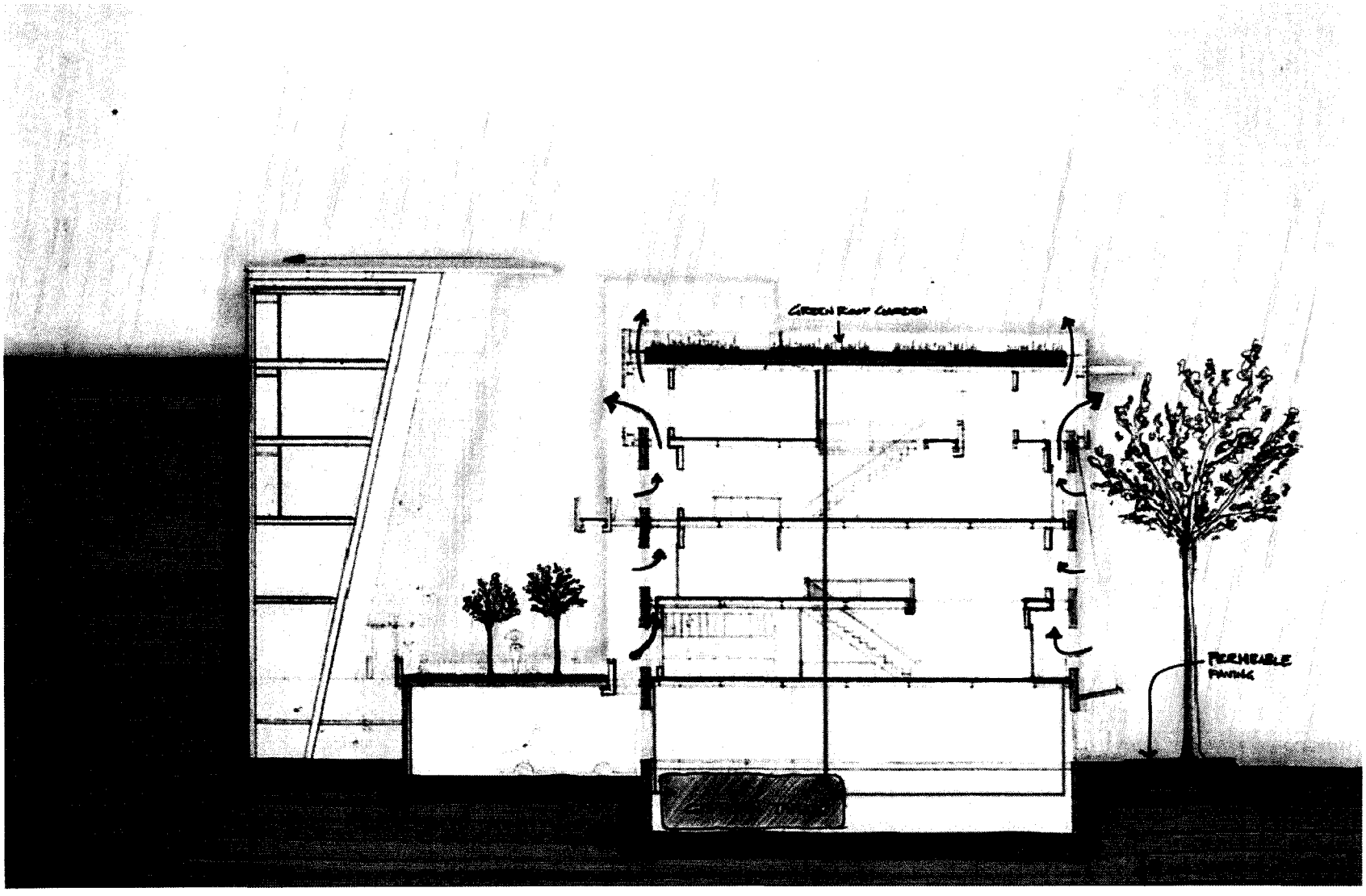
The front façade of the Arlington faces directly south, therefore there is a fair amount of direct sunlight. There are tall deciduous trees in front of this façade, providing natural shading in the summer, while allowing sun penetration during the cold winter months. Also, the new building envelope exists one-to-four feet beyond the existing masonry wall, providing additional shading while allowing diffused sunlight. Reflective surfaces will help bring natural light deeper into the living units without the resulting overheating that can occur due to direct sunlight. The sliding doors leading on to the balcony have a built in louvre system that can be adjusted for sunlight when needed. Another benefit to the double façade is that the space between the new and old structure will help circulate air naturally, drawing cool air from the base of the building. Furthermore, with the units having a double aspect orientation, the ability to promote cross ventilation within the units is increased.

In order to maximize the amount of natural light to the north of the Arlington, the north building has been designed to reflect the winter sun into the court below. This surface will produce diffused light, so not to cause glare into the residential units. The enclosed circulation on the north building utilizes a bris-soleil system to resist overheating and the need for cooling in the summer. This six storey vertical circulation functions as a passive air circulation to the units in the summer, while utilizing the warm air during the winter months through a heat exchanger on the upper level.



Solar study and photovoltaic allocation

The development proposes to utilize the entire site footprint, therefore, consideration was made to harvest rain water through various surfaces. First, the allotment gardens on the roof of the Arlington will absorb rain water, allowing any excess water to be collected in cistern tanks situated in the basement of the Arlington. The hardscaped area located at the centre of the Arlington will have a drainage system that transports rain water into the same cistern tank. Any new pavement will be permeable, therefore, minimizing the need for drainage. The mixed hard and softscaped forecourt to the north of the Arlington will both absorb and drain rain water into the cistern tank. The Arlington and north building will both dispel of their grey water into the cistern tank. This water will then be used to irrigate these green spaces.



Rain water and grey water collection and natural ventilation

Lastly, photovoltaic cells can be attached to the top of the cornice on the Arlington, as well as to the canopy which overhangs the commercial units on the first floor. There is potential to add photovoltaic film to the surface of the north building which will act both as an energy source and a source of shading in the units.

CONCLUSION

Adaptive Reuse and Urban Principles

When designing an adaptive reuse project, there is no typical scenario or standard design solution. Every situation is unique because every building and its conditions are different. Addressing these unique conditions in a thoughtful and meaningful way will help produce a building that exemplifies the importance of what stood before it. In the past, many buildings were adapted and built upon. "Since Scarpa, it has come to be recognized that many of the designs of the great architects of the past were likewise developed in historical contexts: Brunelleschi, Alberti, Cramante, Palladio and Borromini all built, like Scarpa, on the existing structures." [10] In North America, many argue that it is better to demolish a building rather than try and adapt it, but it is important to identify buildings where the significance warrants the careful consideration required to produce a design that will help preserve the building's essence, while generating a response that better suits the needs of the future.

This thesis has focused on the juxtaposition between new and old with respect to adaptive reuse, while addressing various scales of social interaction. Design guidelines were set in order to clearly distinguish between what is being added and what already existed. The most important of these guidelines is the layering of new and old in different planes, thereby generating a habitable threshold in between. Careful detailing allows the inhabitant to understand the tectonic interaction created at these connection points while providing various levels of social interaction. These interactions range from private to public throughout the development in order to reintegrate the existing and new structure into its urban fabric.

Rather than continue the current trend of developing a large scale housing complex, this medium density housing and shared office space has focused on providing high quality

---

[10] Los and Frahm, *Carlo Scarpa*, 32.

and experiential spaces that will help promote adaptive reuse as a viable alternative to demolition. There are several existing historic properties in the city of Edmonton, some of which are beginning to fall into disrepair so, rather than simply tearing them down and building something new, this thesis provides an example of another tradition in design.

Throughout this thesis, the Arlington has provided a housing typology that blends with its urban context. This typology, as seen in the site analysis, is designed to exist on any south facing corner lot. It addresses issues of providing natural light and a dynamic surface to areas that might otherwise become dingy alleyways. While maintaining an active street front with commercial applications, and defining the pedestrian experience with a human scale awning, the building allows for a forecourt to exist above the commercial service lane. This forecourt provides a front yard to residential tenants, thereby creating a social space that is often excluded in large scale condo towers. Another principle integrated in this typology are the flexible housing and live-work spaces, which allow tenants the opportunity to adapt their surrounding conditions to their life style.

This building typology is a much needed part of Edmonton's downtown core. It begins to revitalize the core with walk-up housing, while addressing issues of affordability, flexibility and social spaces, thus producing an urban solution that is tailored to the human scale. Heritage preservation through adaptive reuse and urban densification are essential to the future development of Edmonton, which can in turn produce an insightful and unique solution to further enhance the character of the city.

Urban drawing: Possible sites

REFERENCES

Albertini, Bianca, and Alessandro Bagnoli. *Carlo Scarpa: Architecture in Details*. Cambridge, Mass.: MIT Press, 1988.

"Castelvecchio Museum." *Wikipedia.* http://en.wikipedia.org. (accessed June 11, 2009).

Collins, Lesley. Heritage Planner, City of Edmonton. E-mail communication (November 7, 2008).

Chandler, Robert. *Building Type Basics for Housing*. Hoboken, N.J: John Wiley & Sons, 2005.

Dal Co, Francesco, and Giuseppe Mazzariol. *Carlo Scarpa: The Complete Works*. New York: Electa / Rizzoli, 1985.

Erickson, Aurthur "Design Philosophy." http://www.arthurerickson.com (accessed June 7, 2009).

Fitzgerald, Susan. "Along the cut: An Adaptive Reuse of an 18th Century Canal System in Brierley Hill, England." M.Arch thesis, Dalhousie University, 1999.

Fracchia, Charles A. *Converted into Houses*. New York: Penguin Books, 1977.

"Historic Downtown Apartment Finally gets its Demolition Order." *Edmonton Journal.* http://www.canada.com/edmontonjournal/news/cityplus/story.html. (accessed December 3, 2008).

James, Wendy. "Car! ... Game on: An Adaptive Reuse of Maple Leaf Gardens." M.Arch thesis, Dalhousie University, 2002.

Johnson, Orianne. "Re-creation, an Intermediary Response: Adaptive Reuse of Buildings and Landscapes in Chattanooga, Tennessee." M.Arch thesis, Dalhousie University, 2004.

Los, Sergio, and Klaus Frahm. *Carlo Scarpa*. Cologne: Benedikt Taschen, 1994.

Lubell, Sam. *London 2000+: New Architecture*. New York: Monacelli Press, 2008.

Mostaedi, Arian. *Reborn Buildings*. Barcelona: Carles Broto & Josep Ma. Minguet, 2000.

Murphy, Richard. *Carlo Scarpa and the Castelvecchio*. Boston: Butterworth Architecture, 1990.

Pecoskie, Erica. "Number 1 Spadina Crescent, Toronto: A site for recollection through the adaptive reuse of existing architecture." M.Arch thesis, Dalhousie University, 2007.

Powell, Kenneth. *Architecture Reborn: The Conversion and Reconstruction of Old Buildings*. London: Laurence King, 1999.

Ruttan, Susan. "Arlington may yet rise to 20-storey condo," *Edmonton Journal*, February 17, 2007.

Scarpa, Carlo, et al. *Carlo Scarpa, Architect: Intervening with History*. Montreal: Canadian Centre for Architecture, 1999.

Sherwood, Roger. *Modern Housing Prototypes*. Cambridge Mass.: Harvard University Press, 1978.

Smeallie, Peter H. *New Construction for Older Buildings: A Design Sourcebook for Architects and Preservationists*. New York: Wiley, 1990.

"The End of Edmonton's First Apartment Building." *Real Estate Weekly*. http://www.rewedmonton.ca (accessed February 9, 2009.)

"Today's Archidose." *A Daily Dose of Architecture.* http://archidose.blogspot.com. (accessed July 16, 2009).