

The James Ave Pumping Station: Adaptive Reuse for Graduate Student Accommodation

By

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Abstract

This practicum focuses on the issues of the overlapping boundaries between Student housing and downtown redevelopment. Can graduate students find a place in the downtown to meet their need for off-campus housing, and simultaneously help build a healthy, vibrant, downtown community; ensuring the housing facility represents a quality space for both graduate students and the local community? The following is an investigation of related issues including: Richard Florida's notion of the Creative Class, multi-purpose development, the university as an urban catalyst, and adaptive reuse.

The combination of graduate housing and the city's downtown redevelopment will create new design typology that benefits both graduate students and downtown community.

The practicum project consists of a live/work space for Winnipeg in the Waterfront area by adaptively reusing the James Ave Pumping Station building. The renovated building includes a bookstore, a coffee shop, a daycare, and an urban grocery store. However, the design focuses on the informal learning space and the quality of graduate students' living experience through aspects such as accommodation, study space, meeting and casual spaces.

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1. Introduction

Universities are facing the challenge of how to maintain both competitiveness and sustainable growth. According to Jean-Pierre Gaboury (2008), executive director of the Canadian Association for Graduate Studies, there is a trend across Canada for an increase in the number of graduate students enrolled at universities. However, Canada falls into the 15th or 16th position, behind other major developed countries in terms of the number of graduate students enrolled. Canadian universities need to continue attracting outstanding students and professors to their institutions. Accommodating the growth in graduate students and young faculty members is a crucial issue for Canadian universities.

Students rate living environment and housing options as one of the top priorities in affecting their decision regarding which college to attend (National Multi Housing Council report team, 2007, p.5). Universities in Winnipeg are creating new residential facilities to stay competitive in attracting and retaining students. With six residences on the Fort Garry campus accommodating about 1,300 students, the University of Manitoba is planning a multi-year and multi-million dollar project to retrofit buildings for 21st century use, including a 360-bed undergraduate residence building (Project Domino, 2010). The University of Winnipeg has developed comfortable, affordable close-to-campus student housing options in downtown Winnipeg and has opened a new student residence, McFeetors Hall/Great-West Life Student Residence on campus which provides a home for 176 students and 25 student families in townhouse style apartments (University of Winnipeg Campus Living, 2009).

These new residences have added amenities designed to extend the educational experience outside the classroom, and are transitioning to more comfortable living quarters such as up-scale, apartment-style suites, to meet some of the needs and expectations of today's students. However, to attract outstanding students and professors, institutions must offer them the best possible learning and research environments. In terms of choosing accommodation, not every one wants to live in an on-campus residence. Particularly, the graduate population is much more diverse than its undergraduate counterpart (National Multi Housing Council report team, 2007, p.5). Some come alone, others with spouses or partners, others with children. No one housing option will fulfil their needs. They choose accommodation for a variety of reasons, such as cost, freedom, shorter distance to their part-time job location and to desired amenities. Significantly, "graduate students appear to be more interested in becoming more connected to the city they are living in by living in the general community (National Multi Housing Council report team, 2007, p.5)." Apparently, off-campus living gives graduate students more choices.

Unfortunately, graduate students who arrive in Winnipeg have a little choice for off-campus housing. According to the City Planning department at The University of Manitoba,

"the apartment vacancy rate in Winnipeg has declined for a sixth straight year. The rental housing vacancy rate in Winnipeg is now 1%, (for bachelor apartments as low as 0.5%) the lowest since 1985 due to tight labour market, population growth and very little new rental construction. (This is third-lowest overall vacancy rate among 35 Canadian cities CMHC surveyed.) Canada Mortgage and Housing Corporation reports apartments are more expensive, and harder to find. Rents are going up in the city. The average monthly rental for a 2 bedroom apartment rose 3.4% to \$774 from \$746 in April 2008. Finding the right apartment will therefore be tougher for students (University of Manitoba, City Planning Department, 2010)."

Every year, many Graduate students can only search for accommodation where limited supply means that most have to settle for undesirable housing in isolated neighbourhoods without a sense of belonging or being able to establish their desired life style.

Meanwhile, housing resources in Winnipeg have never stopped growing, especially in the downtown area. The downtown of Winnipeg is undergoing revitalization. The most effective approach is to bring more people to live in the downtown area. Firstly, to attract people back to work and play in the downtown, a number of megaprojects have been built. Among the newest are the MTS Centre, Manitoba Hydro headquarters, with the Canadian Human Rights Museum under construction. All these projects contribute to the downtown when added to the cultural institutions such as the Centennial complex/museum & concert hall, and the numerous Museums located there. Together, they attract millions of people every year, but having attractive destinations is not enough. To keep people downtown after work and leisure activities, many apartments and condominiums, either new built or renovated old buildings have been built through years. However, because of the high development costs, many of them such as the lofts on Princess Street and condominiums along Waterfront Drive, are not affordable to many of the people who want to live in the centre of the city, including “many students, artists, young professionals and older empty nesters who would choose first to live in Winnipeg, if they could” (Kives, 2010). This supply and demand imbalance should attract the attention of developers and policy makers who seek to meet the overflow demand with off-campus properties targeted to the local graduate student population. Winnipeg Mayor Sam Katz stressed, “In order for the Winnipeg downtown to remain a vibrant choice destination, we need to increase the capacity of the residential component that allows those who want to live downtown a viable option”

(Manitoba Government news release, 2010). One step closer to achieving this goal, the Manitoba Government and the City of Winnipeg recently announced a new \$20-million incentive plan to stimulate the development of 500 to 800 new downtown apartments or condos over the next three years, which will translate into 1,000 to 1,500 more downtown residents. This new program will target the maximum grants to new condominiums and apartments with rents at or below the average rent levels for Winnipeg. A minimum of 10 percent of the new housing units supported under this program will be for low-income individuals and families as well as people with disabilities (Manitoba Government website, 2010). According to Winnipeg Free Press, “this program will provide the option of affordable urban lifestyles to more Winnipeggers”.

Could Universities work with private developers to build an off campus housing facility to accommodate some of the graduate students in Winnipeg and relieve pressure on the city’s housing market, at same time to help building a healthy vibrant downtown community? If it were feasible, this would be a tremendous win for both the university community and the city. The design project is to provide the Winnipeg graduate students with innovative solutions to current housing needs and support distinctive lifestyles within the diverse student body.

The site for this project is the James Avenue Pumping Station, located on Waterfront Drive in the historic East Exchange area, Winnipeg, Manitoba, Canada. Waterfront Drive stretches from Lombard Avenue North to Higgins Avenue. Since August 2004, new condominiums have been developed beside the river and as people move into these apartments the revitalization of the area is becoming a reality. However, there remain a

number of vacant historical buildings located in this area offering unique opportunities for development.



Figure 1 Site location, image by author



Figure 2.3 Current view of west and south façade, photo courtesy Jeff Palmer

The Power House of the old James Avenue Pumping Station on Waterfront drive is a double gabled, buff-coloured brick building. When it was constructed in 1906, the station consisted of three main structures: the powerhouse, the gas producing plant and the gas storage tank, which were the heart of the Winnipeg downtown Fire Fighting System. The gas producing plant and the gas storage tank have already been demolished. The Power House is the only surviving structure with the pumping equipment mostly intact. The building has sat empty since the mid-1980s. The need for its original purpose diminished over time, however, the building held historical significance for the city and was listed as a grade II conservation building by City of Winnipeg in 1982. Since the pump house closure in 1986, there have been several proposals put forward to turn the space into a pump house museum plus restaurant. None have been successful in rallying public interest though, and the current owner has removed many of the larger flywheels to make way for new leasable space.

“The buildings interior dimensions are 92 feet by 158 feet. The building height at the center valley and the one quarter point ridges is indicated to be approximately 27 feet and 39 feet respectively. The building is presently unheated and has been for many years. The building still has some electrical power and the ceiling lights can be illuminated. Much of the original equipment as well as two overhead bridge cranes are still present in the building. The existing drawings indicate that a perimeter concrete wall approximately 24 inches thick at grade and 60 inches thick at its base 11feet below grade supports the exterior walls. The foundations are assumed being reinforced” (Wolfrom Engineering Inspection Report of 109 James Avenue, Winnipeg. Manitoba).



Figure 4.5.6. Current condition of the internal space, photo courtesy Jeff Palmer

“The building has only a partial grade level main floor area at the west end of the building. It is approximately 8 feet wide and spans the entire width of the building. It is constructed of equally spaced steel sections supporting a concrete slab. The basement level is approximately 8 feet below grade, and is the floor level at which all of the pumps and engines are located. The basement floor slab not supporting equipment is generally a 12 inches thick cast-in-place concrete floor slab. Footings of thickness up to 8 feet thick supporting equipment compose the remaining areas” (Wolfrom Engineering Inspection Report of 109 James Avenue, Winnipeg, Manitoba).



Figure 7. Building facades, by author.

After a building inspection completed in 2008, Wolfrom Engineering drew the following conclusions on the condition of the existing building: “Presently the building appears structurally sound but has experienced foundation movements resulting in cracked perimeter brick and concrete walls. Some of the cracks are large and will require repair to restore the structural integrity of the walls and provide an adequate seal” same as note above (Wolfrom Engineering Inspection Report of 109 James Avenue, Winnipeg, Manitoba).

The robust structure makes possible to reuse the entire building. Although most of the floor area of the basement is occupied by turbine machines and sump pits, the tall internal space above the ground level is still spacious enough to be used either as one big hall or partitioned into a number of smaller spaces. The existing machinery provides the space with the unique industrial atmosphere, which is an essential feature that makes this building

interesting for the project. The large amount of natural light provided by the perimeter windows makes the internal space desirable for all kinds of activities during the day, and potentially giving views out over the river. Additionally, the existing suction well on the south east corner, outside of the building gives the building another sculptural feature which could be used as a part of any exterior addition. These features in addition to its downtown location make the power house building suitable to be converted into housing and a multi-purpose space.

The methods used to develop this project are varied: case studies; observation; investigation of journal articles, reports and websites. The method is to analyze the client need and the issues of the site and the building and to develop an innovative proposition. Sources are drawn from a variety of fields including interior design, architecture, urban planning, geography, sociology and history.

Chapter Two consists of a literature review of pertinent topics separated into three theories: a) the rise of Creative Class, b) New Urbanism, and c) adaptive reuse. This analysis allows for a better understanding of the subject matter and an informed platform from which to base the design. Chapter Three introduces theories of design interaction, and develops its conceptual relevance to the project. In Chapter Four, the literature review and discussion of theory is bolstered by an analysis of several case studies. This chapter explores and presents detailed information concerning four projects: a) University of Copenhagen Tietgen Dormitory, b) Hotel Transit Loft Berlin, c) SCI-Arc Freight Depot, and d) North Carolina Museum of Art. These case studies represent qualitative descriptive research, and information is pulled from these specific contexts to provide this project with examples of practical experience as well as inspiration. In Chapter Five the project's design is developed

as a culmination of the ideas explored in the previous chapters. This project seeks to contribute to the growing discourse in Winnipeg surrounding the subject matter and develops a new type of student housing by proposing ways interior design can integrate diverse theories to develop a viable solution.

2. Literature Review

The literature review has been drawn from three different but ultimately connected parts. The first part introduces the theory of the Creative Class as developed by Richard Florida insert a description here that briefly explains the creative class and connects it to the role of universities development as an urban catalyst. The second part introduces New Urbanism and Multi Purpose Development, and the third part, Adaptive Reuse is investigated through social and design issues.

The Creative Class

The source for the idea of using an urban renewal project is the rise of the Creative Class, suggested by geographer, Richard Florida in, *Cities and the Creative Class*. Florida argues, “Cities that succeed, are those that are able to attract and retain creative class members” (Florida, 2005, p.31). According to Florida, the creative class is a class of workers whose job is to create meaningful new forms (2002, p.5). It is composed of scientists and engineers, university professors, poets and architects, and also includes "people in design, education, arts, music and entertainment, whose economic function is to create new ideas, new technology and/or creative content” (Florida, 2002, p. 8). Another sector of the creative class includes positions that are knowledge intensive; these usually require a high degree of formal education (Florida, 2002). The creative class is a group believed to bring economic growth to cities that can attract its members in sufficient numbers. The economic benefits conferred by the creative class include outcomes in new ideas, high-tech industry and regional growth (Florida, 2005, p.37).

Florida has discovered a number of trends applicable to my project that are indicative of the new geography of creativity and cities

“The creative class is moving from working-class communities to a set of places: Creative Centers. The Creative Centers are not thriving for such traditional economic reasons as access to natural resources or transportation routes, but largely because creative people want to live there. The physical attractions – sports stadiums, freeways, urban malls, and tourism-and-entertainment districts are unattractive to many Creative Class people. What they look for in communities are abundant high-quality experiences, an openness to diversity of all kinds, and above all else the opportunity to validate their identities as creative people. Creative centres provide the integrated ecosystem or habitat where all forms of creativity, artistic and cultural, technological and economic, can take root and flourish. These centres show strong signs of overall regional vitality, such as increases in regional employment and populations” (Florida, 2005, p.35).

It is the concept of creative centres that has inspired this project to investigate a distinctive off-campus housing facility for Winnipeg’s graduate students.

Referring to the role of the university, Richard Florida reminds us, “A key, and all too frequently neglected, role of the university in the creative economy is as a collector of talent- a growth pole that attracts eminent scientists and engineers, who then attract energetic graduate and undergraduate students. (Florida, 2005, p.100)” Based on the belief in that: “good people attract other good people, and places with lots of good people attract firms who want access to that talent, creating a self-reinforcing cycle of growth” (Florida, 2005, p.111), Florida suggests that “cities should focus on strengthening the university’s ability to attract the smartest people from around the world, the true wellspring of the creative economy” (Florida, 2005, p.120). When they look for a graduate school or a faculty position, these talented people have higher expectations, not only of their study or career, but of their life style as well (National Multi Housing Council report team, 2007), where they live and how

they live. Florida found that “talented individuals appear to be attracted more by cultural amenities than by recreational amenities or climate” (Florida, 2005, p.145).

The Creative Class is also known for its departure from traditional workplace attire and behavior. Members of the Creative Class may set their own hours and dress codes in the workplace, often reverting to more relaxed, casual attire instead of business suits and ties. Creative Class members may work for themselves and set their own hours, no longer sticking to the 9–5 standard. Independence is also highly regarded among the Creative Class and expected in the workplace (Florida, 2002). Richard Florida noticed that “the creative workers need to be able to access amenities almost instantly on demand, whether on their lunch break or immediately following the workday so they tend to live in a diverse, integrated live-work-learn-play community where the distinctions between these activities begin to blur” (Florida, 2005, p.85).

Student housing planning and design professionals must re-identify, analyze, and produce solutions that respond to this changing economic, demographic trends, and technological changes that face higher education and urban development. Like many other North American cities, Winnipeg’s downtown area is a major element in the identity of the city. The downtown contains concentrations of buildings of regional and national significance as opposed to the concentration of neighbourhood facilities as found in other areas. It is the centre of the city’s cultural life that is alive with unique entertainment, culture, art, history and heritage. Many downtown communities such as Princess Street, Chinatown and Waterfront Drive, are located close enough to many cultural facilities to enable residents to walk to the theatre, cinema & restaurants, becoming ideal locations for the creative class and therefore, for graduate students to live.

New Urbanism and the University as an urban catalyst

This section discusses the key principles of New Urbanism, describes the growth and development challenges around which the movement has rallied, and provides examples of New Urbanism playing a strong role in improving communities' quality of life. This section is also intended to provide a context for the adaptive reuse of downtown historic buildings and acknowledges the theoretical evidence for applying New Urbanism's mixed-use urban design principles at the smaller scale through the interior design elements of the Pumping Station project.

New Urbanism is an urban design movement that arose in North America in the early 1980s. Its goal was to reform many aspects of real estate development and urban planning, from urban retrofits to suburban infill. "It's urban design principles support compact development and choices of transportation and lifestyle – making it possible and attractive for people to live, work, play and shop more economically in terms of space, time, energy and resources" (Walters, 2007, p137). City centers are being revitalized by their transformation from business hubs to central districts packed with a mixture of uses: new office towers, sports arenas, convention centers, theaters and museums, shopping and entertainment complexes, and new high-density housing (Walters, 2007, p137). "New urbanist neighborhoods are designed to contain a diverse range of housing and jobs, and to be walkable" (Walters, 2007, p138). It is believed more viable and has been proven to work to create healthier and more vibrant cities.

The downtown of Winnipeg has been going through a similar rejuvenation process. Located on the east part of the unique Exchange District, Waterfront Drive boasts excellent river vistas and a backdrop of early 20th Century architecture. With four high-quality, mixed-

use condominium developments on the formerly vacant East Exchange land parcels, Waterfront Drive is poised to become one of the city's premier downtown neighborhoods (CentreVenture, 2004). However, because of high development costs, these condominiums are beyond the reach of many of the people who want to live in the centre of the city, including “many students, artists, young professionals and older empty nesters, who would choose first to live in Winnipeg, if they could (Kives, 2010)”. The Waterfront is becoming an isolated neighborhood that is only affordable for those on higher income levels. Housing is a critical element to urban revitalization as residential density ensures adequate population to support local amenities like grocery stores and coffee shops. Housing for diverse kinds of people is critical for building a healthy neighborhood. Positive signs are already in evidence. Streetside Development Corporation purchased seven heritage buildings on the south side of James Avenue in the East Exchange District and plans to spend \$20 million over several years converting them into 150 moderately priced condominiums. On the north end of the Waterfront Drive, Youcube, a townhouse development that explores the potential for density and affordability on a narrow 264 feet by 63 feet urban lot, is redefining the high-priced waterfront condominiums. Waterfront Drive is being revitalized toward a more diverse community and in the process, the universities can play an important role.

A multi-purpose facility also has the potential of developing the universities as whole learning organizations that are also learning communities. Michael M’ Gonigle and Justine Starke explain this phenomenon in their book, *Planet U: sustaining the world, reinventing the university*: “as involved employees are to the innovative corporation, so might involved faculty, staff, students and surrounding community be to the innovative

university. Then we would have created a truly active space of learning (M' Gonigle and Starke 2006: 181)".

Building more housing isn't enough on its own. The active life of downtown communities lies in understanding of the importance of multi-purpose and compact development. The downtown development needs to combine commercial storefronts and diverse housing developments.

The goal of my project is to provide graduate students with a new type of residential design that responds to their needs for quality spaces that seamlessly blend living, working and other amenities. Inspired by the New Urbanism movement and M' Gonigle and Starke's further analysis of the potential role of Universities in the development of the urban environment, this project adopts multi purpose development as one of its major design approaches.

Winnipeg's Cultural Institutions include the world-renowned Royal Winnipeg Ballet, the Winnipeg Symphony Orchestra, the Manitoba Opera, the Manitoba Theatre Company, and The Manitoba Theatre for Young People. The Winnipeg Art Gallery, Manitoba Museum, Manitoba Theatre for Young People, Manitoba Children's Museum, Dalnavert House are all within walking distance of the projects proposed site at James Avenue . The site is also in close proximity to The Forks which continues to be the downtown's most popular leisure destination.

Living in Winnipeg's downtown residents can easily access major events, festivals and celebrations year-round including the Winnipeg International Children's Festival, Canada Day Celebrations at The Forks, Fringe Theatre Festival, the Jazz Festival and Dragon Boat Festival. Two of Winnipeg's professional sports franchises are also headquartered in the

heart of the city. The AA baseball team – the Winnipeg Goldeyes – makes its home at CanWest Global Park while the AHL Manitoba Moose play home games at MTS Centre, one of North America’s newest generation of sports and entertainment centers.

New restaurants, retailers and professional services continue to set up shop alongside an already impressive array of shopping, dining and entertainment options. Shopping and dining at The Forks Market and Johnston Terminal are other favored options. Major retail developments in recent years include Mountain Equipment Co-op and Staples on Portage Avenue, as well as a Giant Tiger store just to its north catering to a very diverse demographic.

Strolling through the Exchange District, people discover funky shops, fashion and art, and independent cinema at the Cinemateque Movie Theatre. Waterfront Drive accommodates a number of housing projects. With more people living in this community the shortage of convenient facilities and services becomes more obvious. There is a well documented need for a local grocery store, additional child care facilities, and a good café for people to meet and enjoy the local community.

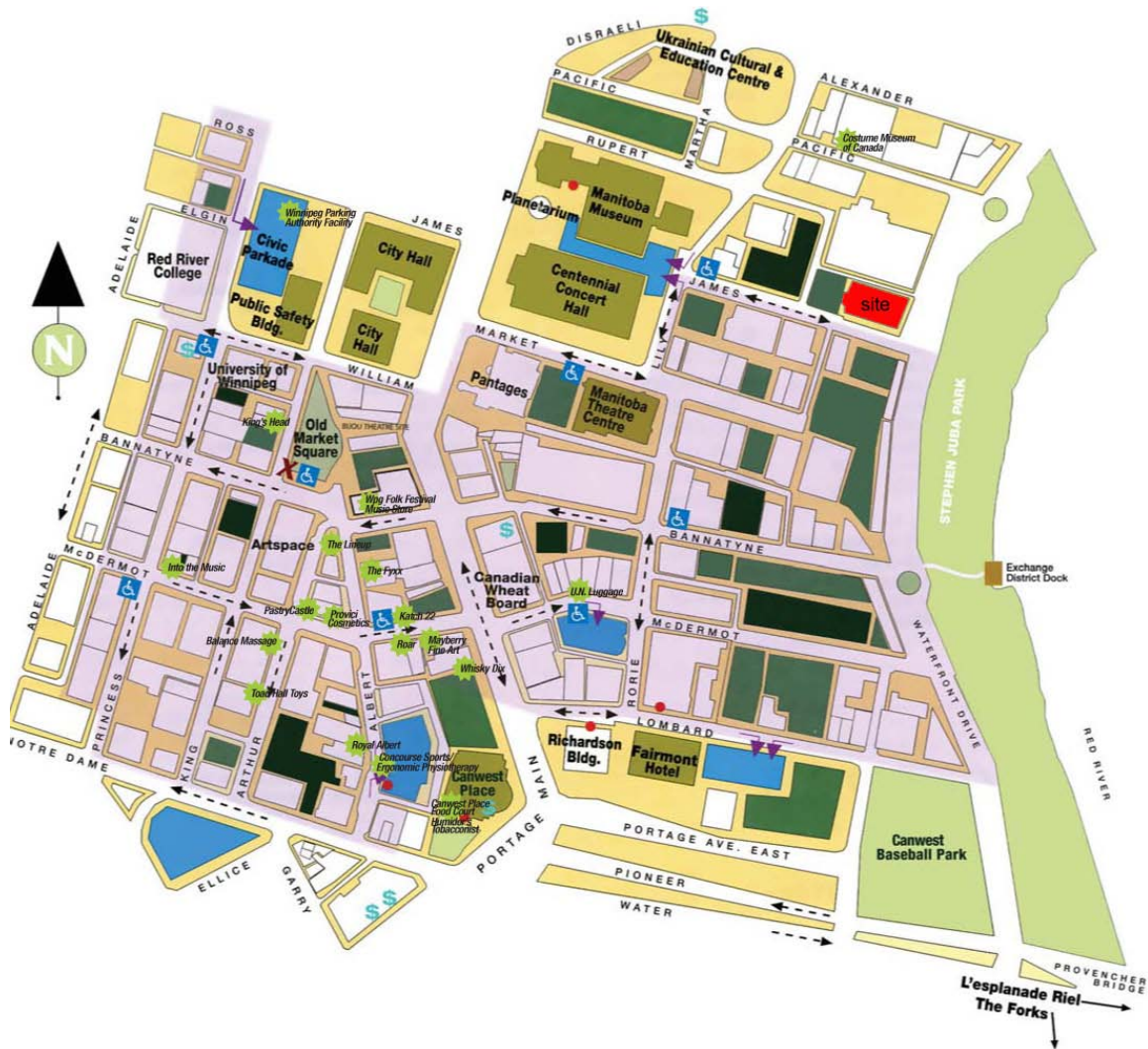


Figure 8. Downtown and the Exchange District Amenities Map, from Downtown Winnipeg Biz

Adaptive reuse

This section addresses the difference between various types of buildings being recycling and discusses why adaptive reuse is a suitable medium for this project.

Rehabilitation looks to capture the essence, or spirit, of a place – its “genius loci” (Moore, 1998, p. 167). Adaptive reuse is a subtype of preservation that involves working with what already exists to create a new category between save and demolish – “the hybrid: restoration, refurbishment and conversion’ are key components of rehabilitation” (Moore,

1998, p.171). And “The extent to which they are applied depends on the type of rehabilitation that is to take place” (Moore, 1998, p.171). Diamonstein suggests that the most important aspect of the preservation movement is the recycling of old buildings - adapting them to uses different from the ones for which they were originally intended. “Successful revitalization demonstrates that the forms and materials devised in the past are still valid when properly adapted to the functions of today’s life” (Diamonstein, 1978, p.13). Florida suggests that the creative class is attracted more by cultural amenities rather than recreational amenities or climate.

The public’s interest in recycling of old buildings started as recently as the early 1960s when the decline of modernism brought the beginnings of a more eclectic, less didactic postmodernist era (Diamonstein, 1978, p.17). In *The Unsettling of America*, Kentucky poet-novelist Wendell Berry writes: “The modern urban-industrial society is based on a series of radical disconnections between body and soul, husband and wife, marriage and community, community and the earth....Only by restoring the broken connections can we be healed” (Diamonstein, 1978, p.17). To materialize this connection, Sherban Cantacuzino, executive editor of the English magazine *Architectural Review*, notes that structure tends to outlive its function, and buildings have been continuously adapted to new uses. This enables generation after generation to derive a sense of continuity and stability from their physical surroundings (Diamonstein, 1978, p.15).

The earliest wave of the Preservation Movement mostly affected valuable residential areas and involved less recycling than renovating, which does not violate the building’s original interior design (Diamonstein, 1978, p.17). During the second stage, roughly since the late 1960’s, developers noticed that everyday buildings are what give a community its

character, and that is “only because of their architectural distinction or premier locations” (Diamonstein, 1978, p.20). Particularly striking at this time was the emphasis on converting everyday buildings and more modest structures, such as abandoned factories and warehouses, instead of limiting projects to landmark and monumental buildings. The techniques of renovation in this period focused on creating a “slick, controlled atmosphere for the affluent and sophisticated. At the same time, they eviscerated their original architectural and market character” (Diamonstein, 1978, p. 23).

As previously stated, revitalization involves bringing areas back into active use. The type of uses to which a building is put is a key component of the revitalization of a historic building. Buildings are physical and functional/social constructs and the intended use can notably impact whether revitalization is successful or not. A building is usually altered because of a change of use, which may be slight or radical. There are numerous reasons for rehabilitation. As David Highfield suggests “Most of the reasons can be attributed to the specific advantages that can be gained by opting for rehabilitation and re-use, although in some cases there may be legislative constraints which leave the developer with no choice but to retain and re-use an existing building” (Highfield, 1987, p1).

Each old building offers different challenges for re-use. In his book, Highfield offers several points that should be carefully considered. The quality of the old building is very significant including its location, size, materials, and physical condition. The estimated cost of development, including: the proposed new use, the standard of rehabilitation envisaged, the age of the building, and the construction of the building will have a big impact on its appropriateness for redevelopment. Other important considerations are : the availability of

financial aid, listed building legislation, the architectural advantages, the availability of the existing infrastructure, and the social advantages.

Highfield points out that “many industrial buildings may have been well maintained throughout their working lives and their physical condition should not be a problem. And many obsolete industrial buildings are located very close to existing town and city centres are therefore ideal for a wide range viable re-use” (Highfield, 1987, p18). Because of their suitable geographical location, they are likely to be excellent choice for re-use. Once a suitable building is selected, “the most important and far-reaching decision that the developer must make, will be the extent, or degree, ranging from the least drastic rehabilitation of existing building is retained and merely upgraded, to the most drastic option of leaving only the façade standing, with the erection of a completely new structure behind” (Highfield, 1987, p20). The redevelopment option chosen will depend on a variety of economic, legislative and other constraints, together with the specific requirements of the site and the developer.

The fabric of the Downtown provides a vital link to the past and lends character to the community. An adaptively reused facility provides graduate students with the opportunity to appreciate and participate in Winnipeg’s unique urban landscape and history. This experience, according to Florida, is important to the creative class, who demonstrate an openness to diversity of all kinds. (Florida, 2005, p.100).

3. Theoretical analysis

In the twenty-first Century, universities need comprehensive sustainability strategies for their campuses (M'Gonigle and Starke, 2006, p.175). On the other hand, the city can no longer be seen as an isolated entity. The interaction between universities and urban communities is happening in multiple layers of dynamic systems: networks of communication, global economics, transportation infrastructures, information technologies, virtual/digital spatial experiences. This requires design to respond with a comprehensive environment that mixes, connects and integrates.

Merriam-Webster defines interface as, 'a surface forming a common boundary of two bodies, spaces, or phases; the place at which independent and often unrelated systems meet and act on or communicate with each other.' 'Interface' is frequently used in urban projects. According to the principals and co-founders of Interface Studio LLC, Scott Page and Brian Phillips, "as a metaphor for bringing people together, the term is used to describe design concepts for buildings, parks and infrastructure networks" (Page and Phillips, 2006, p.68) where "a locus of activity plays out due to the connection between infrastructure, program and people" (Page and Phillips, 2006, p.66). They also explained the benefits of applying the idea of interface: "the idea of interface provides a way of seeing new territory for urban design which integrates a flexible, mutable, design concept which can accommodate the complex dynamics associated with urban processes including elements of social, political, infrastructural and physical form" (Page and Phillips, 2006, p.67).

However, Page and Phillips believe that "a broader approach to developing urban interfaces is needed to make connections to services, markets and employment opportunities

available elsewhere” (Page and Phillips, 2006, p.68). Page and Phillips believe that “the twenty-first Century city is particularly susceptible to great contrasts in physical, economic, and social conditions as global influences interact with very local ones” (Page and Phillips, 2006, p.68). Therefore, “urban interfaces represent the potential for an urbanism that is simultaneously compact and distributed” (Page and Phillips, 2006, p69) where use and amenities are typically confined to one space or site and can be accessed at locations throughout an urban area through digital networks. The urban interface inscribes a frame around how we interact with our environments in all aspects of our lives. “The question for designers is threefold: the nature of the specific programs and services, their adaptation to specific contexts, and where investment should be targeted. The objective is to organize a strategic framework that determines key positions within the urban fabric that overlap with critical nodes of physical and digital flows” (Page and Phillips, 2006, p69).

Graduate students are using personal computers as the tool of communication and performing academic work. Students living away from school can still work with their study group and supervisor through teleconferencing systems while accessing library resources through digital networks. Technology gives the student freedom to choose to live where they feel comfortable without sacrificing their study. As a result, the interface between universities and off-campus students extends into many vibrant districts throughout urban areas that are inclusive of all kinds of amenities. In this project, the biggest challenge for designer is the programming: to determine what activities should be introduced in to this multi-purpose space in order to encourage the interaction between students and users from the neighbourhood.

The strategic framework is comprised of the two major user groups' needs and the distinctive character of the site. The result of applying this framework is the multi-purpose public space that consists of a study area, a bookstore and a coffee shop. This public space is a centralized “work/play” facility serving for both the residents of the student dormitory and people that form the neighbourhood. Page and Phillips believe that urban design will evolve to not just plan for the activities of designated groups or city organizations, but actively seek ways of promoting local productivity that have a visible impact on the physical fabric of cities.

This project emphasizes two critical social and physical connections: between the facility and the local community, and between residents within the facility. To facilitate these interactions, an idea of ‘permeability’ guides the interior design approach. In the building, vertical and horizontal connections are emphasized to visually and socially bridge the different functional zones. Intentionally braided into the urban context of the Waterfront area, certain interior elements are planned to extrude into the exterior space to create a physical connection and a visual impact in the external community which will signify a new meeting place. At the same time, exterior space will be introduced into the interior to create an intervention.

Reuse is a dominant theme throughout the project. “Successful revitalization demonstrates that the forms and materials devised in the past are still valid when properly adapted to the functions of today’s life” (Diamonstein, 1978, p.13). As the specific physical context of the site, the Pumping Station building exposes both the history and existing character of the neighborhood. A new place with new meaning is now born and growing from the old space. The design task is to mine the old spatial character and materiality of the

site, and then develop it to meet the needs of the new users. Interaction design will be demonstrated through a deliberate composition that integrates the past, present, and future material functions of the building.

Theory is an important component of the design process that is already present in contemporary design and practice. For this project, the theory of urban interface gives a unique view to the diverse layers of communities and helps the designer to create space for community interaction in an innovative way.

4. Case Studies

Precedents have been chosen for their contribution to thinking about diverse aspects of the program. They are: University of Copenhagen Tietgen dormitory; Hotel Transit Loft Berlin; SCI-Arc Freight Depot; and North Carolina Museum of Art. They serve as important illustrations of various facets of my project. Either negative aspects which serve as a lesson or positive ones showing valuable reference. Though one yardstick, of course, is whether it assists in forming the design solution for my project. I also included a diversity of categories – places to live in, work in, play in; etc.

Tietgen dormitory

Year: 2006

Area: 26.800 m²

Number of flats: 360Background

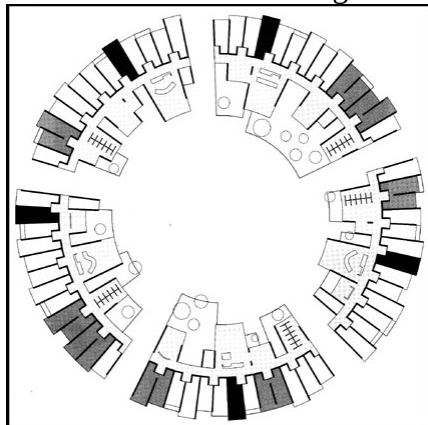


Figure 9,10. Plan and exterior view, photo from www.dac.dk

In the winter of 2001/2002 four architecture firms were invited to an architecture competition, in which the participants were expected to present a proposal for the future student residence that, inspired by the classic and well functioning form of dormitories,

should be the future form of student housing – offering a housing milieu that supports and develops an attractive environment for both living and studying (tietgenkollegiet). Tietgen dormitory is conveniently situated near bus stops and subway stations that connect with the rest of Copenhagen, including the main square and the Copenhagen Central Station. The nearest subway stations are only a few hundred meters away from the residence (tietgenkollegiet). Tietgen dormitory has apartments in four general categories. Category A (26 square meters), category B (29 square meters), category C (33 square meters), and the two-room apartment category D (45 square meters). Within the four categories a number of the apartments come with either a small or large balcony (tietgenkollegiet). Tietgen dormitory has given communal facilities an exceptionally high priority. The ground floor of all 5 blocks is dedicated communal activities with facilities such as a computer café, assembly hall, work shops, laundry rooms, music rooms and more. On the residential storeys each apartment group consisting of 12 apartments shares a large kitchen, communal living room and bicycle parking area (tietgenkollegiet).

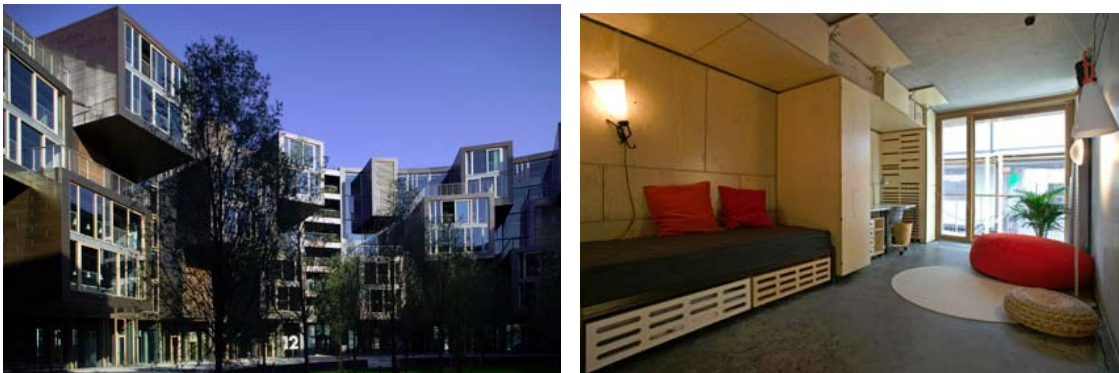


Figure 11,12. Courtyard and student apartment room, photo from www.dac.dk

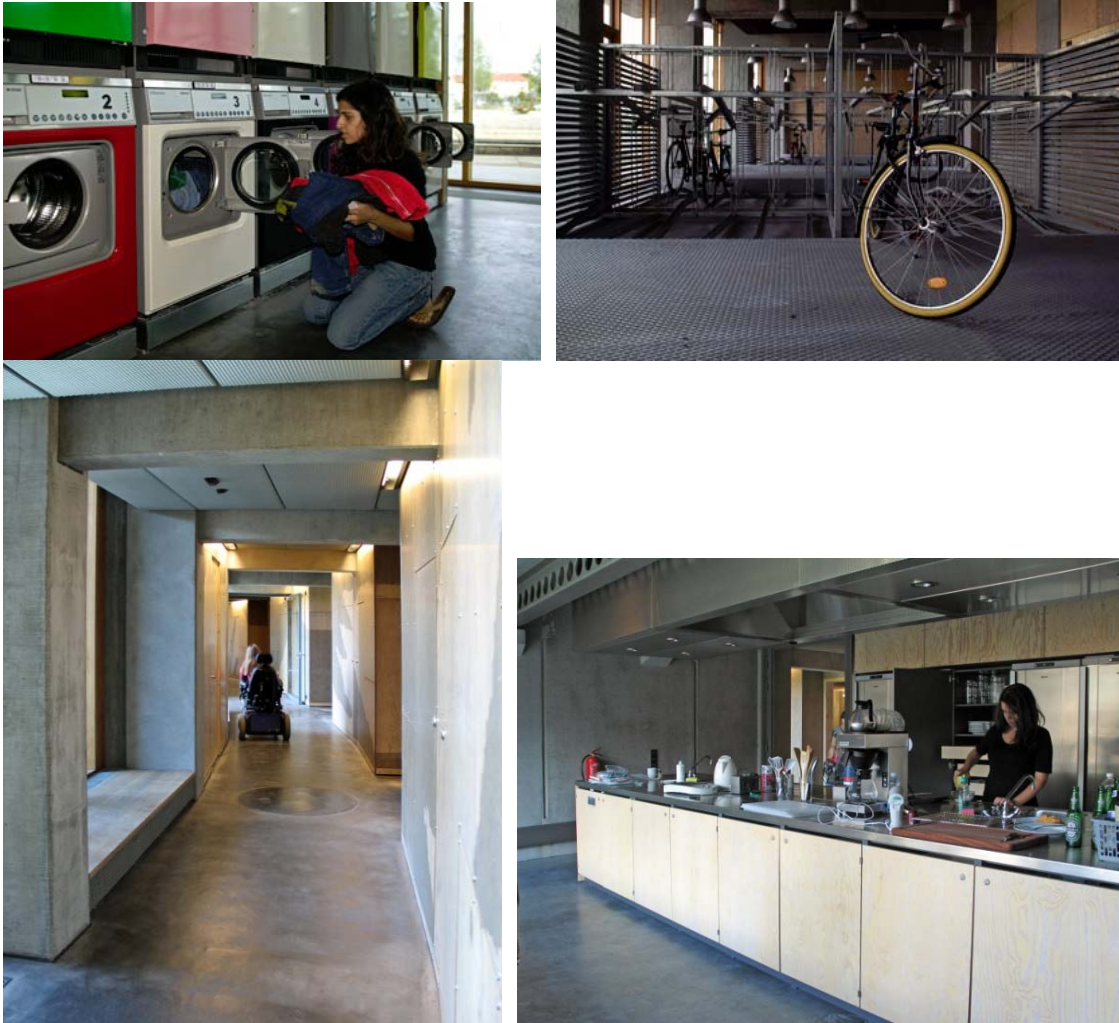


Figure 13,14,15,16. Clockwise: Public laundry, Bicycle storage room, Public Kitchen, Hallway, photo from www.dac.dk

Every 72 student apartments in the building are supplemented by a large communal area, including a kitchen, living room and utility room, as well as conference and reading rooms, an assembly hall, and a bicycle parking area. The unique configuration of functional spaces created a series of interesting communal area. The residents have both their own private suites and desirable public gathering spaces. The building's interior is characterized by an exposed concrete structure and plywood clad partitions. Poured magnesia flooring and acoustic ceilings of expanded metal are used throughout the dormitory

(<http://www.ltarkitekter.dk>). The Scandinavian utilitarian material application in both interior and exterior spaces make the overall environment filled with modern and creative atmosphere.

Hotel Transit Loft Berlin



Figure 17. the hotel lobby, photo from www.eurocheapo.com

Hotel Transit Loft Berlin is a modern hotel renovated from an old factory. “A yellow-brick, late 19th century building was completely modernized in 2001.” The hotel has five floors and offers a variety of leisure activities. “The dormitory has 47 rooms (1-6 beds). All rooms are high-ceilinged, bright, airy, friendly and functionally furnished. The rooms are all en-suite equipped with a shower and toilet. The single bedded dorms are spacious and comfortable (no bunk beds). The large dormitory rooms are good for a small group of friends” (Transit-Hotels). All suites are designed with functional consideration and equipped with basic facilities for short stay.



Figure 18,19,20,21. Clockwise: Cafeteria, Hotel suite, Bar, Hotel suite, photo from www.eurocheapo.com

The area surrounding the hotel has seen many changes over the last few years. Around Kollwitzplatz one finds restaurants, cafés, pubs and bars. “From the Kulturbrauerei with its cinemas, clubs and cabaret, to the Prater, enjoyed by young and old for over a century and the Berlin Wall memorial Mauerpark, Prenzlauer Berg presents itself as one of Berlin's most exciting districts” (Berlin-life). The choice of location for this hotel obviously was a consideration for the needs of the major user group – young foreign visitors. First of all, they prefer to live in the vibrant old Berlin core for easier and cheaper access to all the tourist

destinations. Secondly, a historical building allows them to experience the more original tastes of Berlin's daily life.



Figure 22. Exterior view of Hotel Transit Loft Berlin, photo from www.eurocheapo.com

Compared with its simple suites, the former factory has been converted into a multiuse leisure facility, “the hotel shares the building with the “Billiard Fun” pool bar, a cinema often showing movies in their original language, a gym with sauna and aerobics and last but not least, a famous billiard-saloon with billiard, snooker, carambolage, and other leisure-related enterprises.” (Berlin-life). The old factory building evolved and retained a remembrance of its former function and value. The inherent qualities of the place and its surroundings, combined with the anticipation of the new use, produced a complexity impossible to replicate

in a new building. The designer's approach was obviously to celebrate the beauty of the historical building and to stitch the distinctive elements together with several modern additions. Apart from the ground, the added glass elevator shaft facilitated movement along the surface of the existing exterior wall. This encouraged the visitor to examine the buildings more closely. Designed for short stays, the hotel focuses not only on providing travellers a base camp closed to their destinations or major transportation nodes, but obviously making their stay a more unforgettable experience as well.

SCI-Arc Freight Depot:

Santa Fe Freight Depot is a quarter-mile-long (longer than the Empire State Building) with ceilings up to 20 feet (6.1 m) high and broad views of the downtown skyline in the industrial area to the east of Downtown Los Angeles, now known as the Arts District. In 2001, the Southern California Institute of Architecture (SCI-Arc) renovated and converted the building, considered an "industrial leftover," into a 61,000-square-foot (5,700m²) architecture school. The renovation was designed by SCI-Arc graduate and faculty member Gary Paige.



Figure 23,24. Student dorm and lounge area Photo from www.architecturalrecord.com

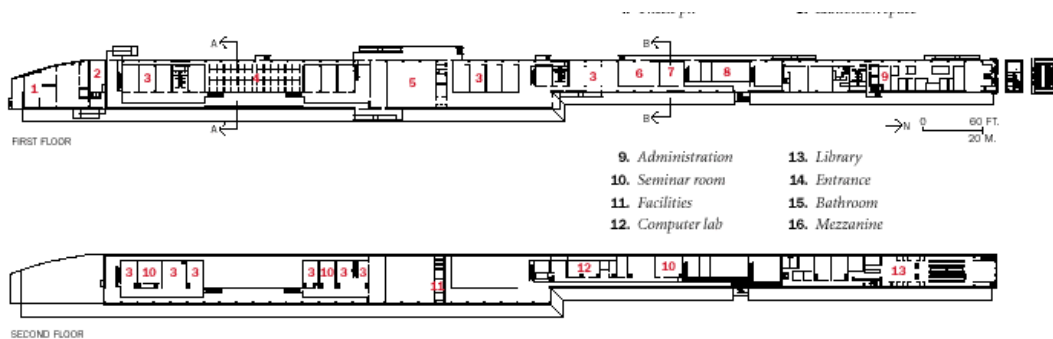


Figure 25. Floor plans Photo from www.architecturalrecord.com



Figure 26. The public can wander in. A "college without walls". Photo from www.architecturalrecord.com

This precedent relates to my practicum regarding in the faculty's insight in choosing an industrial building which would not become "a static landmark" and the "making this a building of the present tense." SCI-Arc had taken root in the neighborhood by bringing hundreds of young people into the once-abandoned area. The building has helped revitalize a neighborhood previously considered "a gritty corner of downtown," According to Pritzker Prize-winner and SCI-Arc co-founder Thom Mayne, SCI-Arc's move to the former freight depot was "the prototype of an institution that resonates with energy and creativity."

SCI-Arc provided a porous boundary between the campus and the downtown creative community. The public may wander into the building. The school's exhibits and lectures are free. Guests can amble through the studios and galleries, and witness the school's founding principle - a "college without walls" - in action (Salovey, 2005, p.37).

SCI-Arc also retains many of the key elements of the depot. The modern structural elements -- steel, expanded metal grating, corrugated decking forms, concrete sheer walls -- are exposed, unfinished. All of this reinforces the earliest purpose of the building (Goldin, 2001, p.1). The design put the school inside the existing depot binds the past to the present and unites the future of the school to the future of the city. “We like that we are inscribed into the fabric of the city,” The architect, Paige emphasized that he worked hard not to make a signature building. “It will be both a window and a lens through which the city can peer in and the students can peer out. It will involve Los Angeles in an open dialogue (Goldin, 2001, p.2).”

Besides the inspiring site choice of this precedent also provides an important reference to the adaptation of industrial structures. “Paige inserted a series of partially enclosed lightweight steel structures within the existing Concrete-and-rebar frame. The recombinant building is a lesson in engineering and architecture. Thirty thousand square feet of studios and seminar spaces, a workshop, a thesis pit and a bridge to the library have been stacked, cantilevered and suspended to form an open-ended, permissive, flexible space (Goldin, 2001, p.2).”

It seems that anything can happen within these walls. This, is desirable for creative people who, according to Salovey, look for spontaneity, collegiality, intellectual intensity, and most importantly, the opportunity for the unfettered exchange of insights and ideas, some bizarre and others amazing (Salovey, 2005, p.37).



Figure 27. Night view of NCMA. Photo from www.ncartmuseum.org

North Carolina Museum of Art (NCMA)

The 127,000-square-foot North Carolina Museum of Art expansion project by Thomas Phifer and Partners is a single story, 26-foot-tall volume with a subterranean level. It consists solely of new gallery space for the museum's collection as part of a larger restructuring of its programs. The pavilion organization of the program emphasizing two primary types of integration for the building: maximizing the building's interaction with the surrounding park campus and top lighting for all the galleries.

This precedent is a very different type from my project; however its notion of interaction, community experience, and how various systems are organized to create spaces for specific objects in the larger context inspired me.

"The pavilion qualities of the building engender both programmatic and material integration with the site, program, landscape, light, and structure. In the museum's program,

some collections need their own environments with controlled conditions. The scale of particular spaces is distinctive and light has to be very carefully adjusted. At the same time, other collection, such as Roman and Greek antiquities that are less sensitive to natural light, are placed in juxtaposition with vignettes of outdoors and views of the landscape” (The interview of Thomas Phifer). The designer thinks that the biggest challenge is unifying the various elements, the existing and the planned pieces of the puzzle, into a beautiful, appropriate whole (Moe, 2008, p.96). As the solution, the mass of the building is penetrated by a variety of garden spaces, which connect interior programs with the Museum’s park campus. Exhibition space and visitors’ routes are in between integrated systems, such as building envelope, partitions, out door gardens, natural light ceiling and so on. In this way, the architect really made a space that works with the character of the collections to create a strong, beautiful sense of place.



Figure 28, 29. Courtyard view of NCMA Photo from www.ncartmuseum.org

Equally as important as system thinking, organizing the flow of the integrated systems has crucial reference value to my project as well. “Visitors go into clusters of galleries and then come out and get re-oriented in a beautifully lit center hall. They go into center hall and they see other visitors doing the same thing. It allows people to have a

wonderful one-on-one experience with art, at same time have a collective experience.”

(www.ncartmuseum.org). Looking at art becomes a shared social activity. Drawing upon that notion led architectural strategies that suggest art can have a relationship to something other than itself. In Thomas Phifer’s own words, “You get a sense of community and shared experience.” (The interview of Thomas Phifer).

Summary

These four case studies each exhibit particular characteristics that this project seeks to incorporate and, as such, are useful as precedents for this study. New type of student accommodation and communal space are studied in Tietgen Domitory. Adaptive reuse of buildings and mixed-use are explored through Hotel left Transit and SCI-Arc Freight Depot. Creating interaction and community experience are studied in North Carolina Museum of Art. As is evident in the discussion of these precedents, each site outlines the possibilities and the pitfalls involved in addressing complex social and political issues with design.

5. Conclusion

With the financial help of Manitoba Provincial Government and initiatives from the City, the downtown of Winnipeg is embracing a great opportunity for revitalization. A more diverse population will benefit from this progress. The coordination between the two Universities and the downtown regarding development is critical. With the insertion of a university housing facility, graduate students will be able to enjoy the benefits of downtown and off-campus life. At the same time, the downtown community will be infused with an active population of creative individuals. More young creative people living in downtown area will require services and support all kinds of cultural activities, and create more economic opportunities for the local business community. The proposed multi-purpose facility will become an innovative live/work space for off-campus living graduate students. For the adjacent community, it will become a convenient amenity, and an ideal place to meet and enjoy community life. The adaptive reuse of the James Avenue Pumping Station will not only help maintain the cultural and historical value of this heritage building, but will create a new attraction on Waterfront Drive as well. The issues and challenges that this project brings to design are typical in the downtown redevelopment of Winnipeg. The general idea of the design concept is its universality.

This project consists of two main parts: graduate student apartments and a group of supporting facilities located in the existing Pumping Station building. These spaces include graduate student study spaces, a daycare, a grocery store, a bookstore and a coffee shop. In order to maximize accessibility from all directions and in response to the buildings central location in the neighbourhood, most public facilities run along Waterfront Drive, James Avenue, to Amy Street. The loading dock is located off the back lane at the lower level.

Circulation will be generous and create cross-boundary connections. Mainly located on the main floor, the public spaces also extend into the lower level and the second floor. Sky lights are planned on the ridge of the existing building to allow more natural light into the tall internal space, mainly for the benefit of the study areas and bookstore. All three turbine machines in north part of the building are intended to be removed in order to make room for the proposed grocery store. Sump pits will be covered with steel panels to prepare for the new flooring. The remaining three machines in the south part of the building will be retained. They will become the essential design elements of the proposed complex building. The new addition provides student accommodation and is designed to sit above the north part of the Pumping Station. The new building employs a light steel structure to reduce the impact on the existing structure and foundation.



Figure 30. Space planning, by author

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APPENDIX A: Program

Spatial Type	Approx. Area sq. ft	Activities & Uses	Description
Student Accommodation	1300	Public Kitchen & Lounge: equipped with two kitchen stations, stoves, sinks, and refrigerators.	There four spaces are all on the main floor. The corridor space provides casual seating, indoor landscaping, with clerestory windows. Residents and visitors will find the convenient drop-in places for follow-on discussions after study, and generating further ideas after using other facilities of this complex building.
	1000	Public Laundry: equipped with 4 washing machines and driers and a sitting area	
		Corridor: indoor landscaping, sitting areas	
		Terrace: patio sitting area	
	300	Suite Type A	A private, furnished room including a single foldable bed. Working space, desk, chair, lamp, and wardrobe, kitchenette and a bathroom with a shower.
	500	Suite Type B	Lofts apartment with sleeping area on the upper level connected with the living and kitchen/dining area in the lower level by a stair.
	600	Suite Type C	Apartment for two students share a kitchenette (microwave, small refrigerator and sink) and bathroom and have an individual furnished room including bed, desk, chair, lamp, and wardrobe.

Spatial Type	Approx. Area sq. ft	Activities & Uses	Description
	600	Suite Type D	The family suite has a full kitchen, built-in closet, living room, full bathroom including bathtub.
Active Learning Centre	3500	3 study kiosks: each group study room accommodates up to twelve students equipped with conventional desks for quieter private study. The presentation corners are for small scale presentations. Sitting areas are for relaxation and group study. A tele-conference room for distance learning beyond the physical campus, through high speed network connection. It may be booked by students. When not booked, It is available on open access for study purposes. It has computer, projection facilities and white boards.	Students will make best use of their time here and want to stay outside of formal contact time to feel part of the academic community here. It is a space for reading, accessing the internet, relaxing, socialising or talking through ideas with peers or professors. The study area offers a variety of learning and teaching settings, around a large informal study and social area. WiFi is available throughout and open access PCs are available at various points. It provides a variety of furnishings arranged for different levels of formality, group size and comfort, with good natural lighting. There are sofas if you want a comfortable place to work with a laptop or socialise, and harder seating around tables if you want to work and discuss ideas using books and papers.

Spatial Type	Approx. Area sq. ft	Activities & Uses	Description
Bookstore	3000	Shelving and stack area, seating area, gift stand and cashier.	The intention is to create a bookcase spanning vertically three floors and penetrating the exterior wall to the outside space on the Waterfront drive. Customers are lead upstairs in the three storey 'Bookflat.' Climbing is planned as an experience lies in the close encounter with the old industrial structures, interior elements and the stunning views of the Red River.
The Turbine Cafe	2000	A coffee service counter with register and coffee machine, coolers, seating area for 40 plus people. A shared vestibule between bookstore, café and study area is provided. Outdoor patio will provide a new venue for students and community residents to host interdisciplinary events.	The coffee shop provides a unique venue for contemplation and interaction with genuine historical site. Inspired by the existing elements in the site, the bookstore and cafe is designed to incorporate the industrial objects and design motifs of original pumping station.
Grocery Store	6000	It carries a full grocery line including fresh produce, frozen foods, bakery, and dry goods, dairy, floral and a small gift shop. The functional spaces are checkout counters, storage (cold/dry), staff rooms, loading area.	This urban grocery store is to accommodate a supermarket prototype on a small urban block serving the student residence and the neighborhood.

Spatial Type	Approx. Area sq. ft	Activities & Uses	Description
Daycare	2000	Staff and parent areas, service areas, common space, classroom of 6 infants young toddler areas, includes: activity area, support area, cubby storage, food preparation, eating/table area, nursing, sleeping, diapering station and storage, adult toilet, storage; classroom of 10 older toddlers and pre-school children, includes: activity area, support area, cubby storage, children's art sink, children's hand-washing sink, children's toilet, storage; outdoor play area. One outdoor playground.	A daycare to serve the student residents and the neighborhood.

APPENDIX B: the building inspection report by Wolfrom Engineering, 2008

WOLFROM ENGINEERING LTD.

February 4, 2008

File No: W08019

Centre Venture Development Corporation
492 Main Street
Winnipeg, MB
R38 1B7

Attention: Jeff Palmer

Dear Mr. Palmer

Re: **Inspection of 109 James Avenue, Wpg. MB**

Assignment

Wolfrom Engineering Ltd., was retained by Mr. Palmer of Centre Venture Corporation to perform a visual structural inspection at the noted address.

The purpose of the inspection was to access the condition of the existing buildings structural components of the existing building and to provide a written record of our findings.

Our inspection was limited to a visual examination of the exposed interior and exterior components only.

Existing Drawings

To assist us in our investigation, Wolfrom engineering was able to retrieve from our archives copies of some of the architectural, structural and mechanical drawings for this building. It is not a complete set of drawings but it does provide useful structural information which would not have been otherwise available by visual means.

These drawings are available for viewing or copies can be provided upon request.

Description

The existing drawings dated 1906 identify this building as a Winnipeg fire service pump house.

The buildings interior dimensions are noted on existing drawings to be 92'-0" x 158'-0" which was confirmed by our field measurements.

The building height at the center valley and ¼ point ridges is indicated to be 27'-4" and 39'-2" respectively, which also approximately matches our field measurements.

The building is presently unheated and has been for many years.

The building still has some electrical power and the ceiling lights were illuminated during the inspection.

Much of the original engines, pumps, pipes, and associated equipment as well as 2 overhead bridge cranes are still present at this time.

A large amount of water was noted in the lower pit areas and is presently frozen since the building is unheated.

Foundation

The existing drawings indicate that a perimeter concrete wall approximately 24" thick at grade and 60" thick at its base 11'-0" below grade supports the exterior walls.

Interior square concrete pads noted as 21" square by 12" thick support the interior building columns.

Engine and pump foundations are constructed of concrete footings of varying shapes and dimensions with thicknesses up to 96".

We assume the foundations are reinforced but there is no reinforcing noted on the existing drawings.

Pit walls are shown much thicker than the perimeter concrete walls but their exact thickness cannot be confirmed.

Floors

The building has only a partial grade level main floor area at the west end of the building. It is approximately 8'-0" wide and spans the entire width of the building. It is constructed of equally spaced steel sections supporting a concrete slab.

The basement level is approximately 8'-0" below grade, and is the floor level at which all of the pumps and engines are located.

The basement floor slab not supporting equipment is generally a 12" thick cast-in-place concrete floor slab. Footings of thickness up to 8'-0" thick supporting equipment compose the remaining areas.

Superstructure

The exterior perimeter walls are constructed of brick varying in thickness from approximately 24" at the base and slightly thinner at roof level.

Equally spaced interior steel columns adjacent to the exterior brick walls and at the centreline of the building support the steel roof trusses and bridge cranes.

The roof is constructed of 2 triangular shaped equally spaced 46' long steel roof trusses creating a valley at the center of the building and ridges at $\frac{1}{4}$ points. Steel purlins span between these trusses. The type of roof decking could not be determined.

Observations

The interior of the building interior is unheated thus freezing the large amount of water noted in the pit areas. This ice is confined within the pit areas and will have exerted large undesirable pressures against the concrete walls.

Since the building has been unheated for many years the subgrade below the slab and footings will be frozen to a substantial depth.

Some unevenness and cracking was noted in the basement concrete floor slab. The slab movements were not substantial and the cracks can be repaired.

Generally the visible inside face of the concrete walls appeared intact with some vertical cracks noted. The cracks varied in width from hairline to approximately 1/8" thick and were random and infrequent. These cracks have developed due to a combination of small foundation movements and thermal effects combined with the lack of control joints in the wall. These cracks can be repaired to restore the structural integrity of the walls and provide a weather tight seal.

The mezzanine framing appeared to be level and although worn was, in sound condition. Small cracks were noted in the concrete topping of the mezzanine, of the mezzanine, but are not considered to be significant structural damage.

The concrete stairs to the basement at the north and south end of the mezzanine were intact and in relatively good condition.

Some large cracks were noted in the exterior brick walls. These cracks are significant enough to warrant repairs to restore the structural integrity of the brick walls.

Rust was noted on many of the structural steel components but appears to be minor with minimal loss of base material.

Cracks were noted in the exterior face of the brick walls and in the stone sills below windows. It will be necessary to seal these cracks to prevent moisture penetration and further deterioration.

Conclusions

Presently the building appears structurally sound but has experienced foundation movements resulting in cracked perimeter brick and concrete walls. Some of the cracks are large and will require repair to restore the structural integrity of the walls and provide an adequate seal.

The cracks in the floor slab appear older and some appear have been previously repaired. The concrete slab is supported by a subgrade soil which is susceptible to volumetric changes. The unheated building will have caused the supporting soil to freeze and expand as ice forms. It can be expected that when the building is heated the subgrade will thaw and settle resulting in more cracks. The extent of the damage caused by the thawing of the subgrade cannot be predicted.

Similarly the perimeter and interior footings supporting the superstructure are currently bearing on frozen material. Heating the building may cause settlement of the soil at these areas and differential building movements resulting in new cracks and possible distress the building framing. The amount of settlement and amount of movement cannot be predicted.

The exterior brick walls and stone sills have cracked. The cracks vary in length and width and require repair. They should be repaired to restore their integrity and provide a seal to prevent water penetration and further deterioration.

The roof deck was not examined and we cannot comment on its condition or if it leaks.

Recommendations

We recommend that the following repairs and inspections be undertaken after the building has been heated and all the frost removed from the supporting subgrade material.

1. Heat the interior of the building as required to remove all frost from the subgrade material. This will require test holes to be drilled through the concrete so soil samples can be taken to confirm the frost has been removed.
2. Remove all standing water from the interior of the building.
3. Inspect for structural damage at locations where the standing water was frozen.

4. Re-inspect the entire structure to determine if the thawing process has caused any new structural distress within the building.
5. All the existing larger cracks in the concrete, brick walls and floor slabs should be epoxy injected. Any new cracks as a result of the thaw should also be epoxy injected.
6. All new and existing cracks in the stone window sills and exterior brick walls should be epoxy injected.
7. The roof membrane or decking should be closely examined to determine its condition.
8. Prior to any development all rust should be removed from all primary structural steel building members by sand blasting or equivalent methods.

This concludes our preliminary report, if you have any questions please call. We can provide additional engineering services to execute the repairs if you should require this assistance.

Yours truly,

A handwritten signature in black ink, appearing to read 'P McShane', written over the 'Yours truly,' text.

Pat McShane, P.Eng.

PJM



Cracked slab



Cracked slab



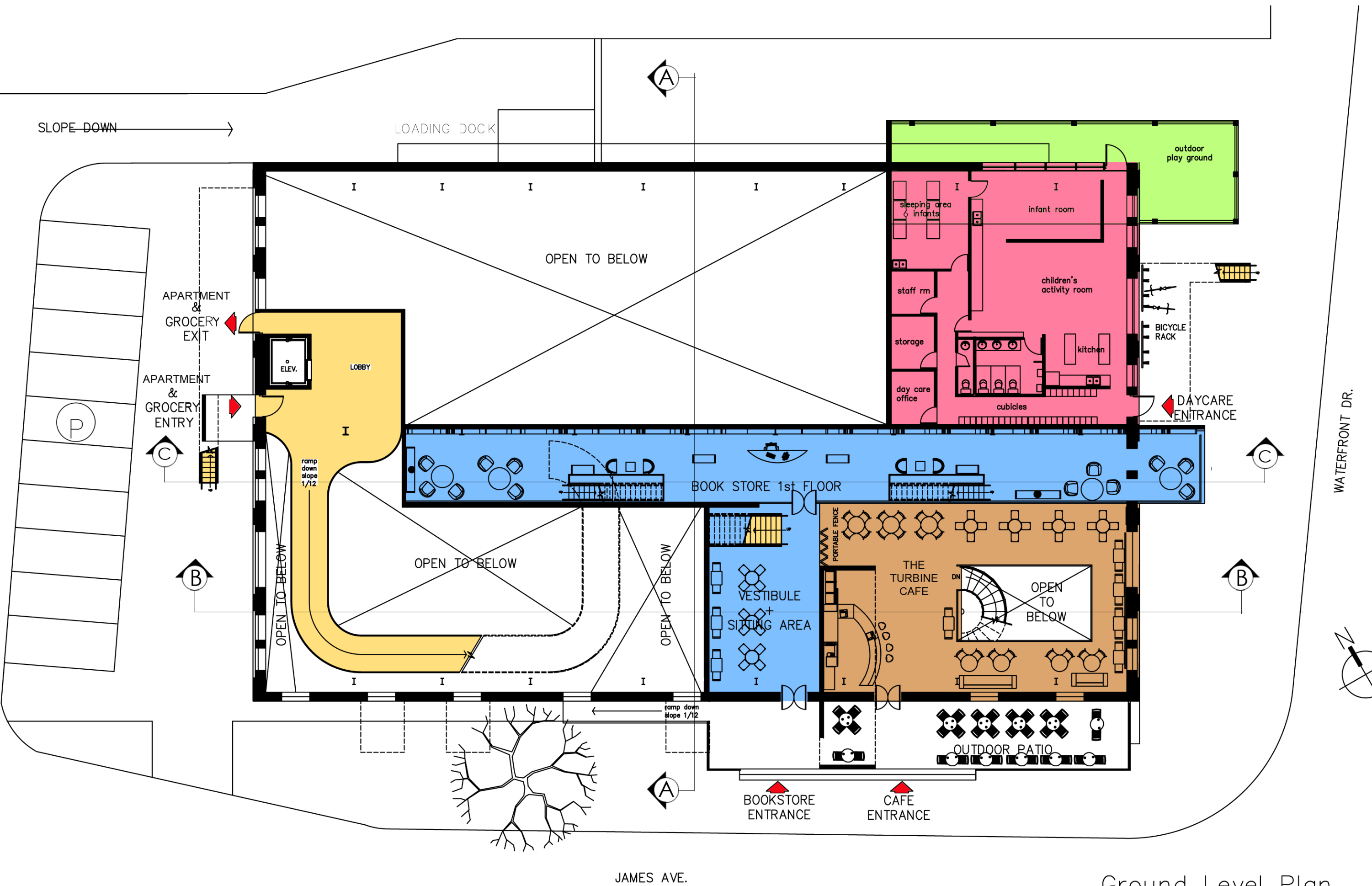
Cracked brick wall



Cracked concrete wall

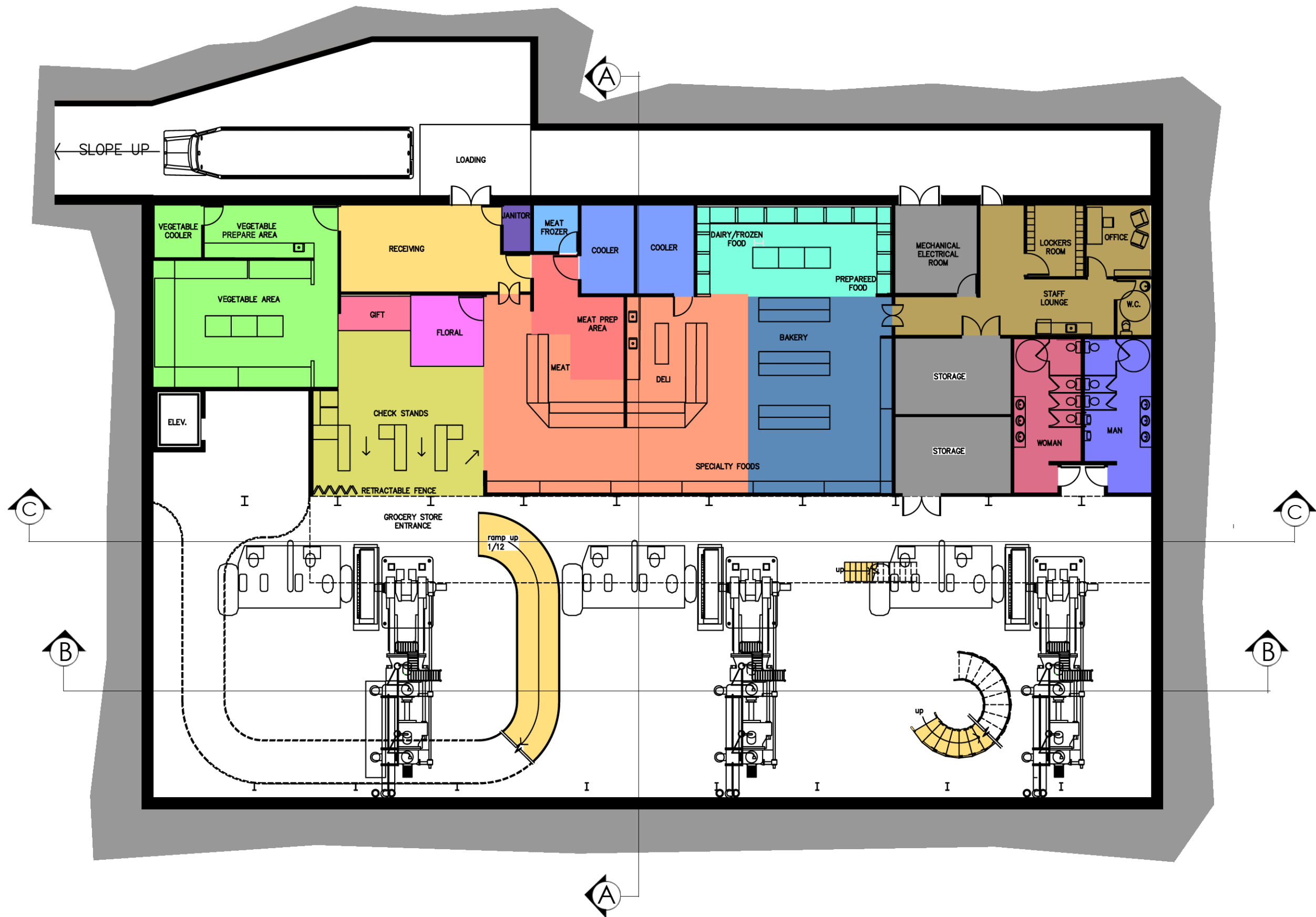


Mezzanine Framing



JAMES AVE.

Ground Level Plan
Scale 1/16"=1'-0"



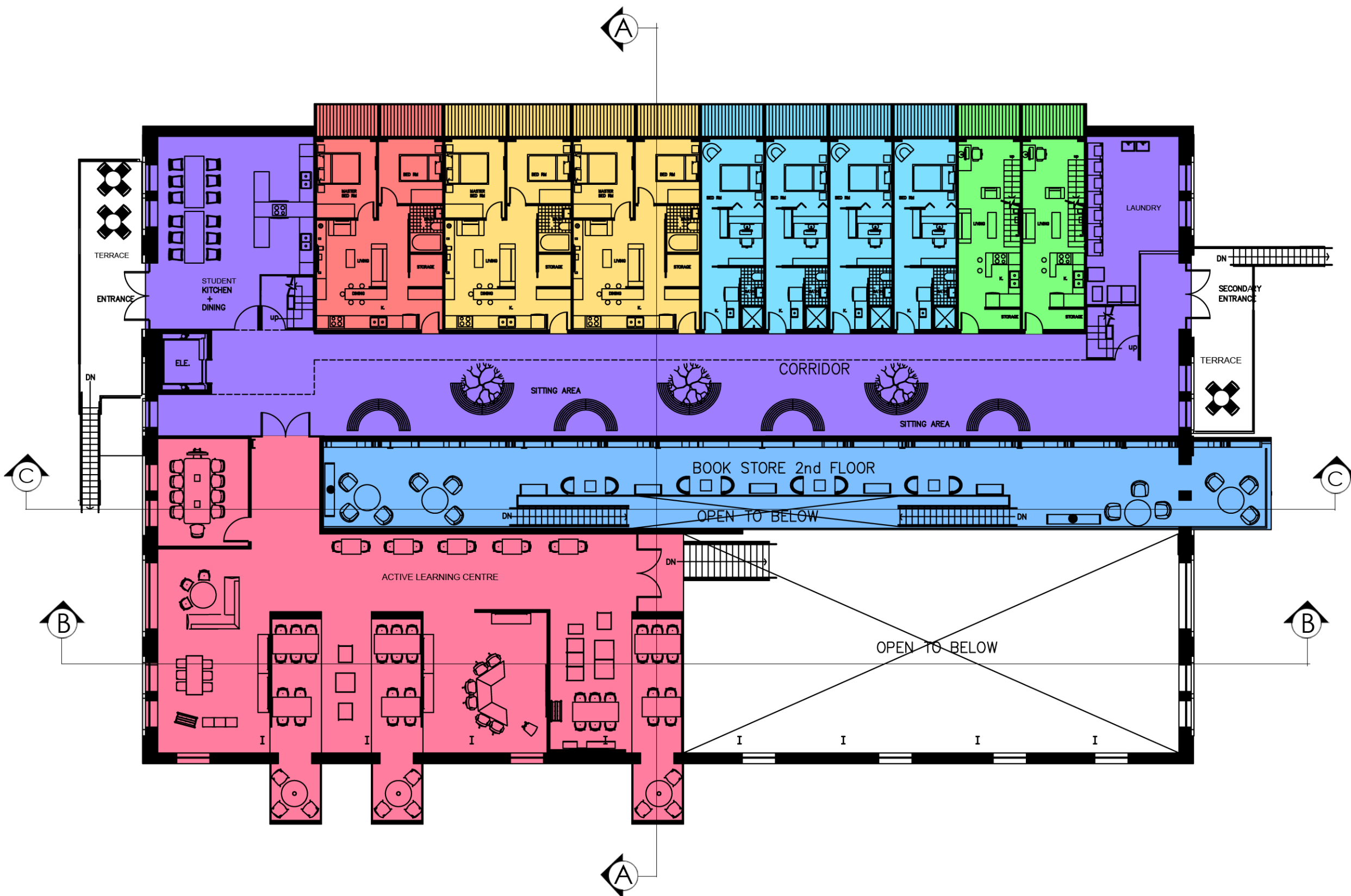
Lower level Plan
Scale 1/16"=1'-0"

THE PUMPING STATION COMPLEX

by:
Xiaolei (David) Yan
May, 2010
Winnipeg

BUILDING PLAN

THE JAMES AVE PUMPING STATION ADAPTIVE REUSE,
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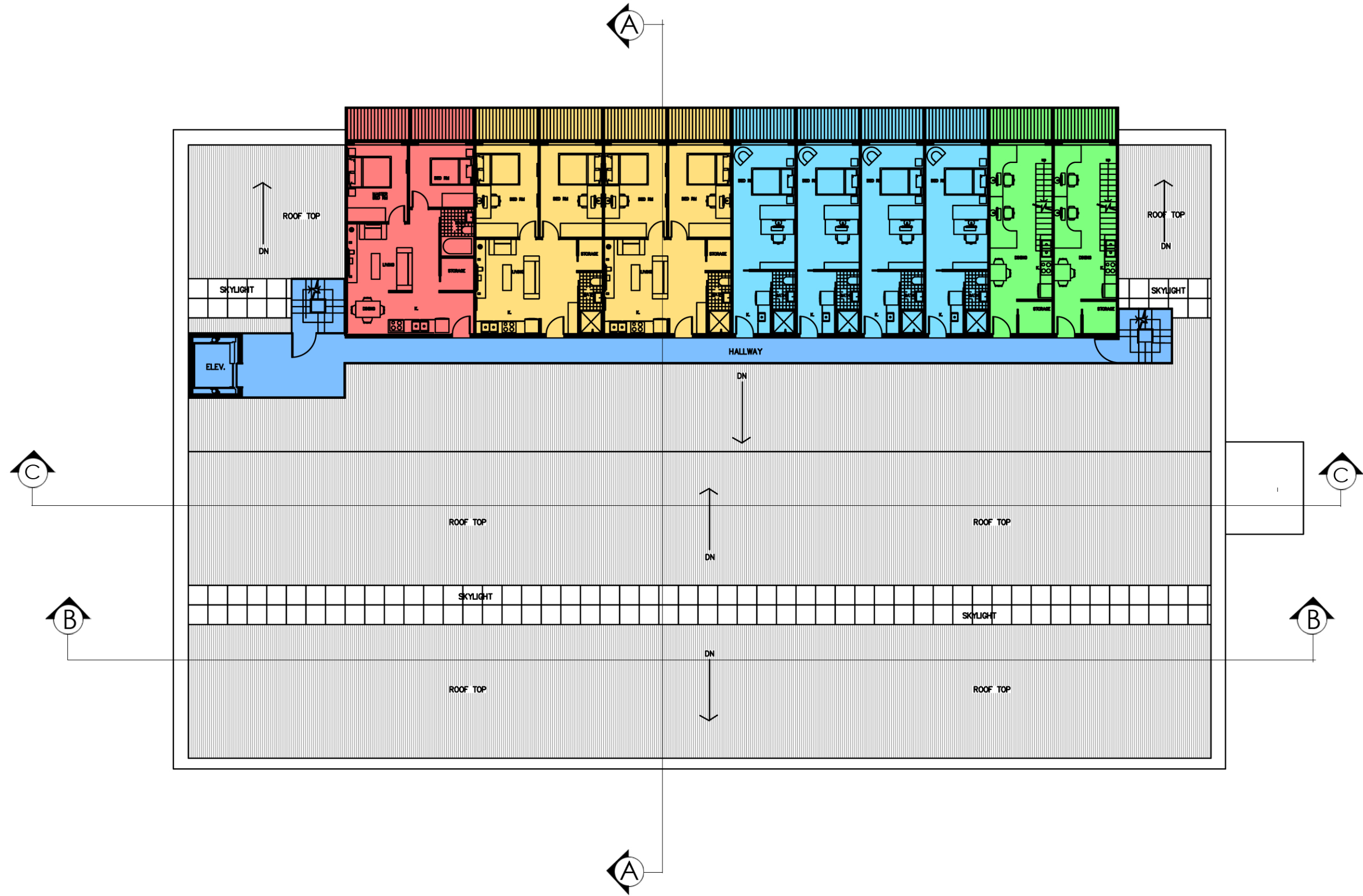


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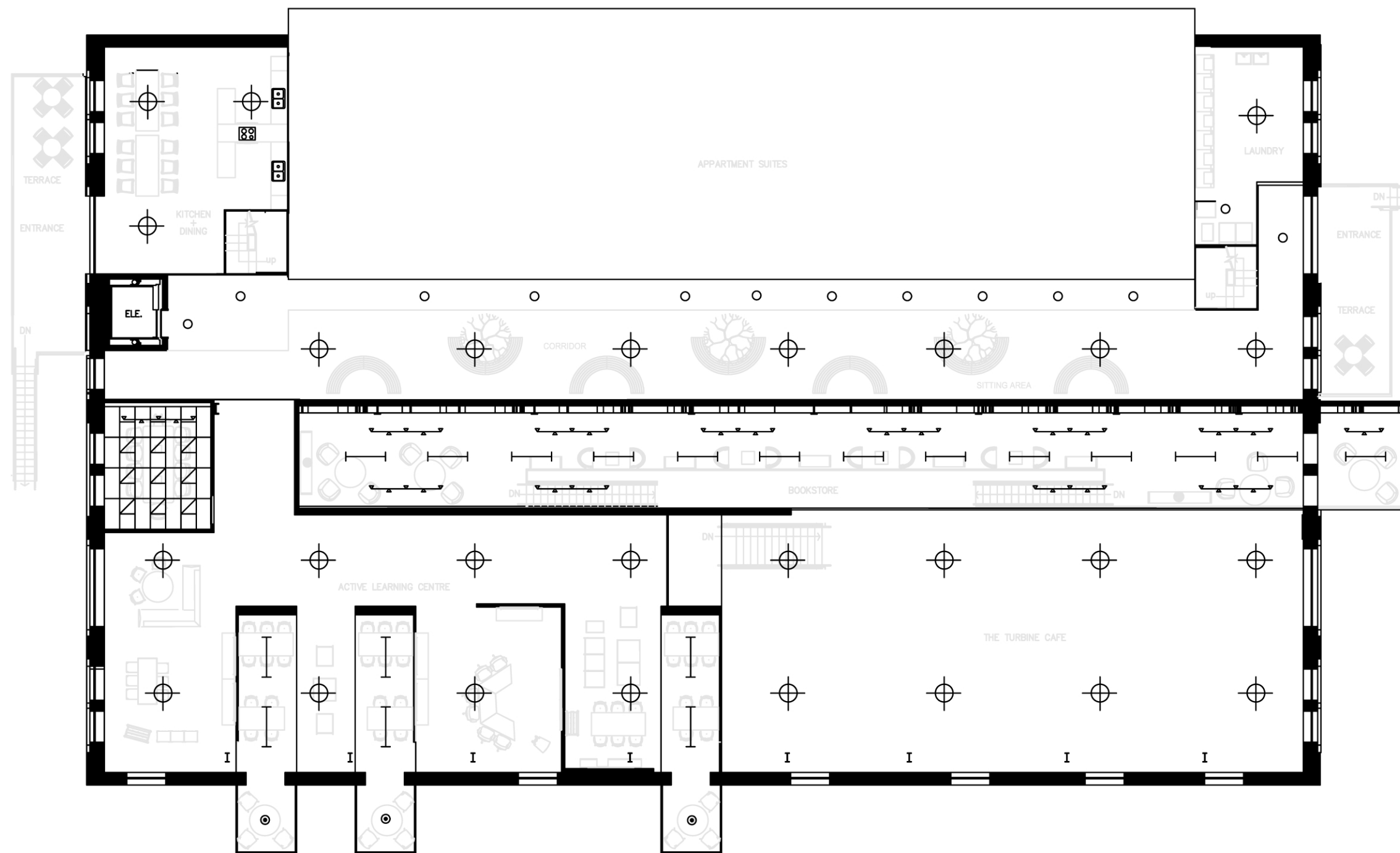


3-5 Floor Plan
Scale 1/16"=1'-0"

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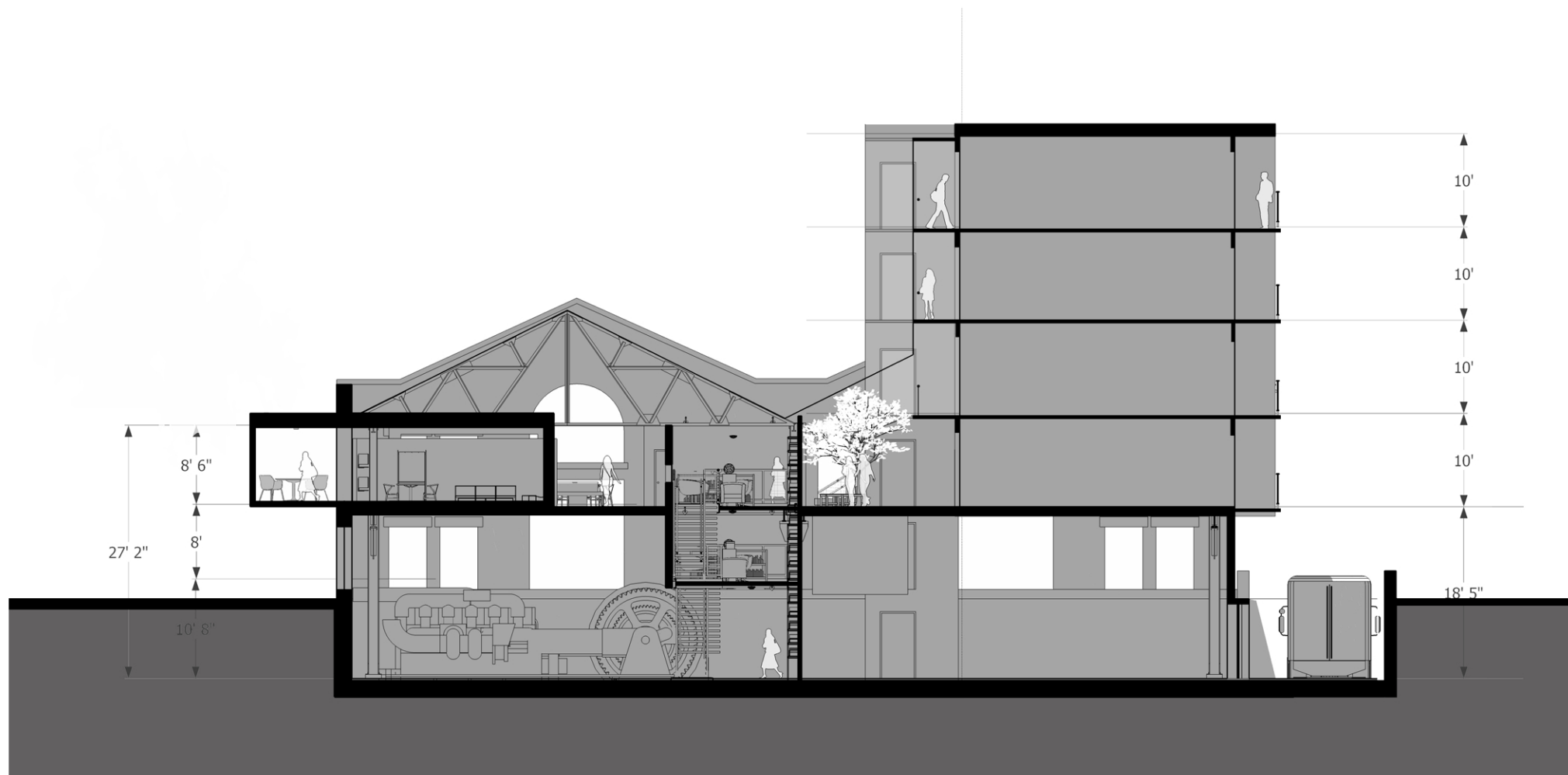


LIGHTING LEGEND:

-  2X4 ACOUSTIC CEILING BOARD
-  2X2 ACOUSTIC CEILING BOARD
-  2X2 FLUORESCENT DOWNLIGHT
-  1X4 FLUORESCENT DOWNLIGHT
-  TRACK LIGHT
-  INDUSTRIAL STYLE SUSPENDED LIGHT
-  RECESSED DOWNLIGHT
-  POTLIGHT



2nd Floor Reflected Ceiling Plan
Scale 1/16"=1'-0"

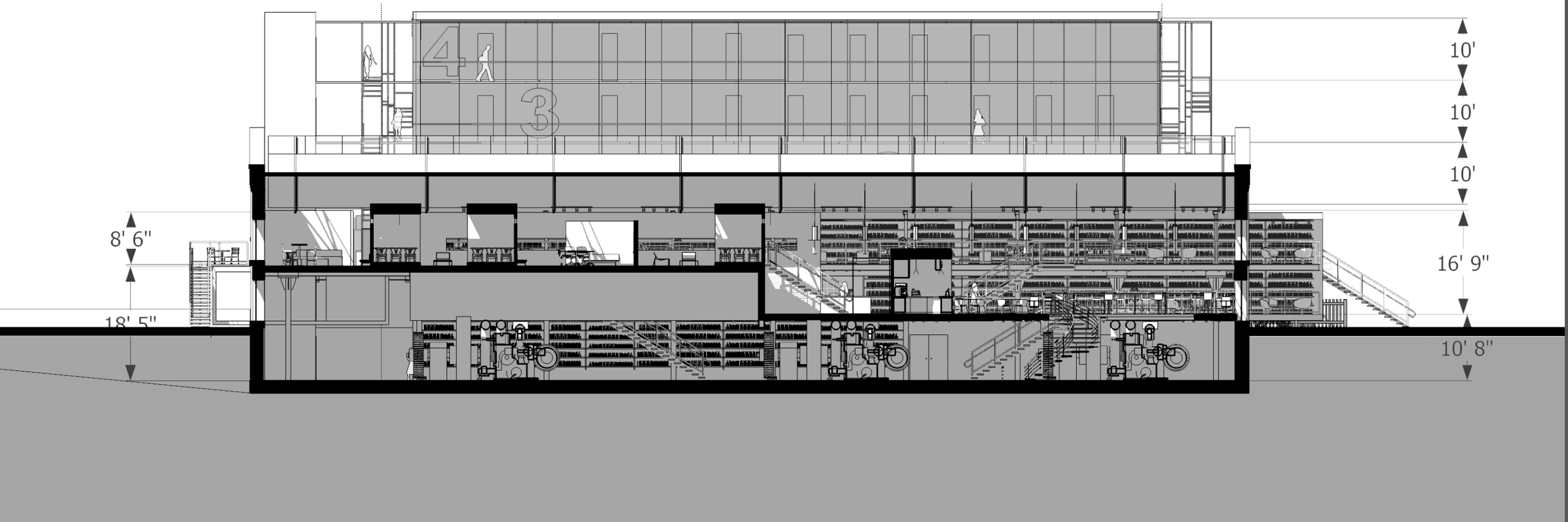


A Building Section
scale: 1/16" = 1'

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B Building Section
scale: $\frac{1}{16}'' = 1'$

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Building Perspective



South Building Elevation
scale: $\frac{1}{16"} = 1'$

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BUILDING ELEVATION

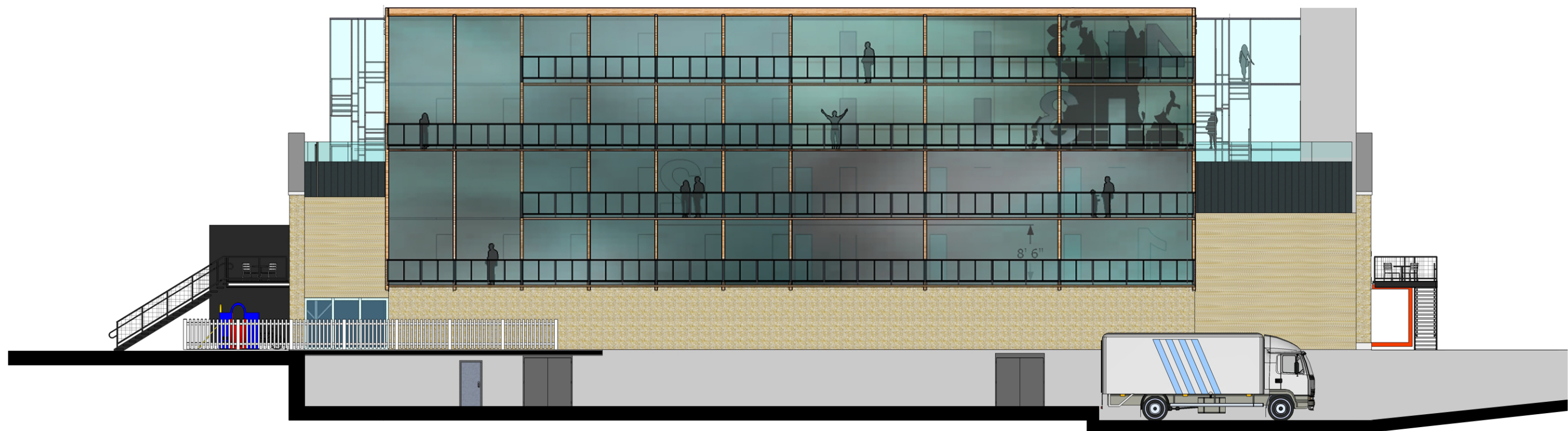
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West Building Elevation
scale: $1/16'' = 1'$



East Building Elevation
scale: $1/16'' = 1'$



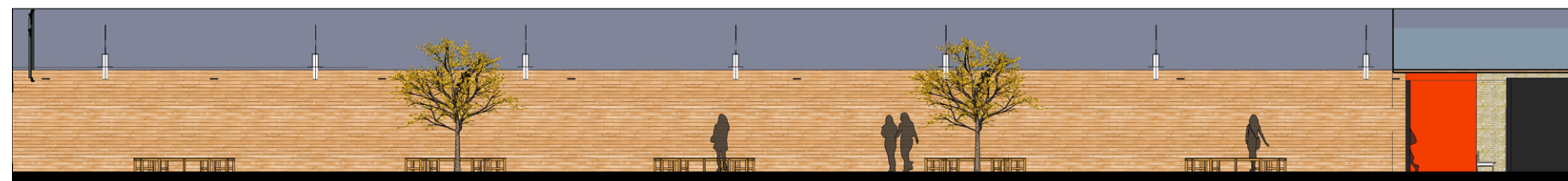
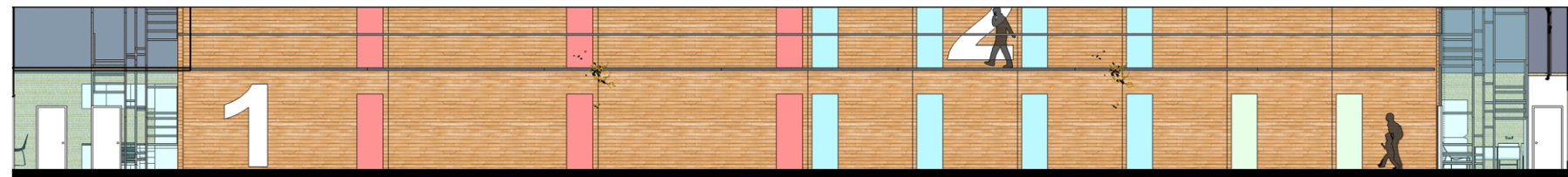
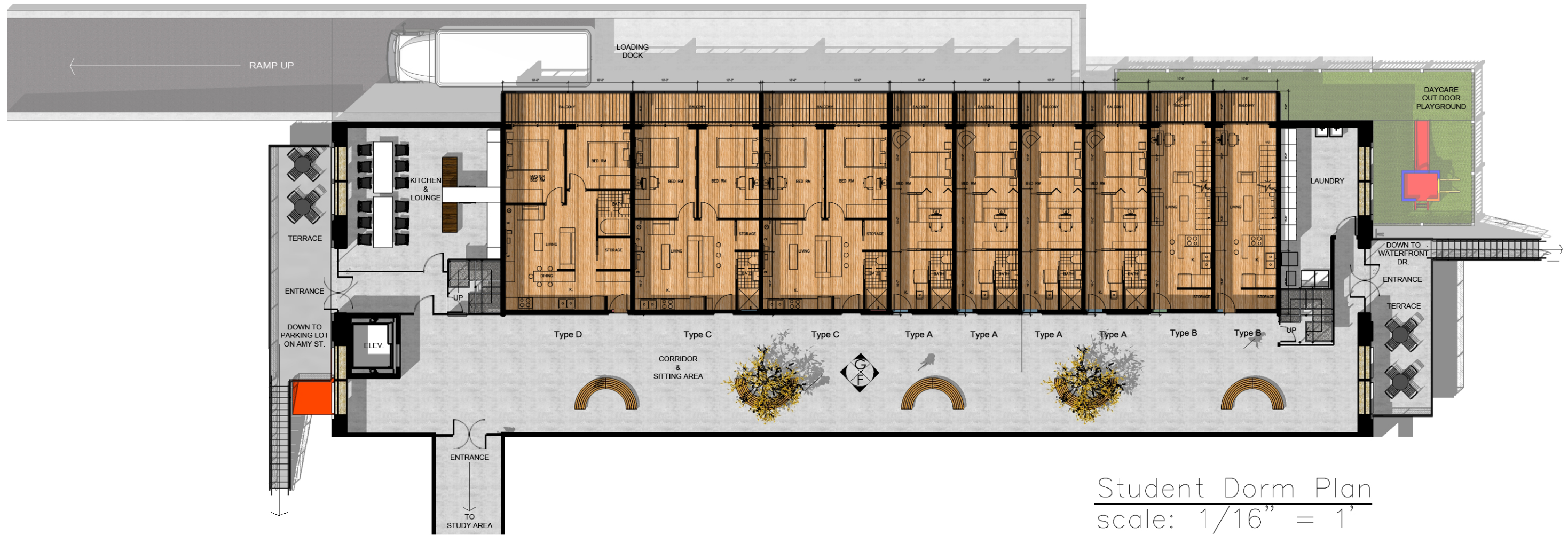
North Building Elevation
 scale: $\frac{1}{16}'' = 1'$

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BUILDING ELEVATION

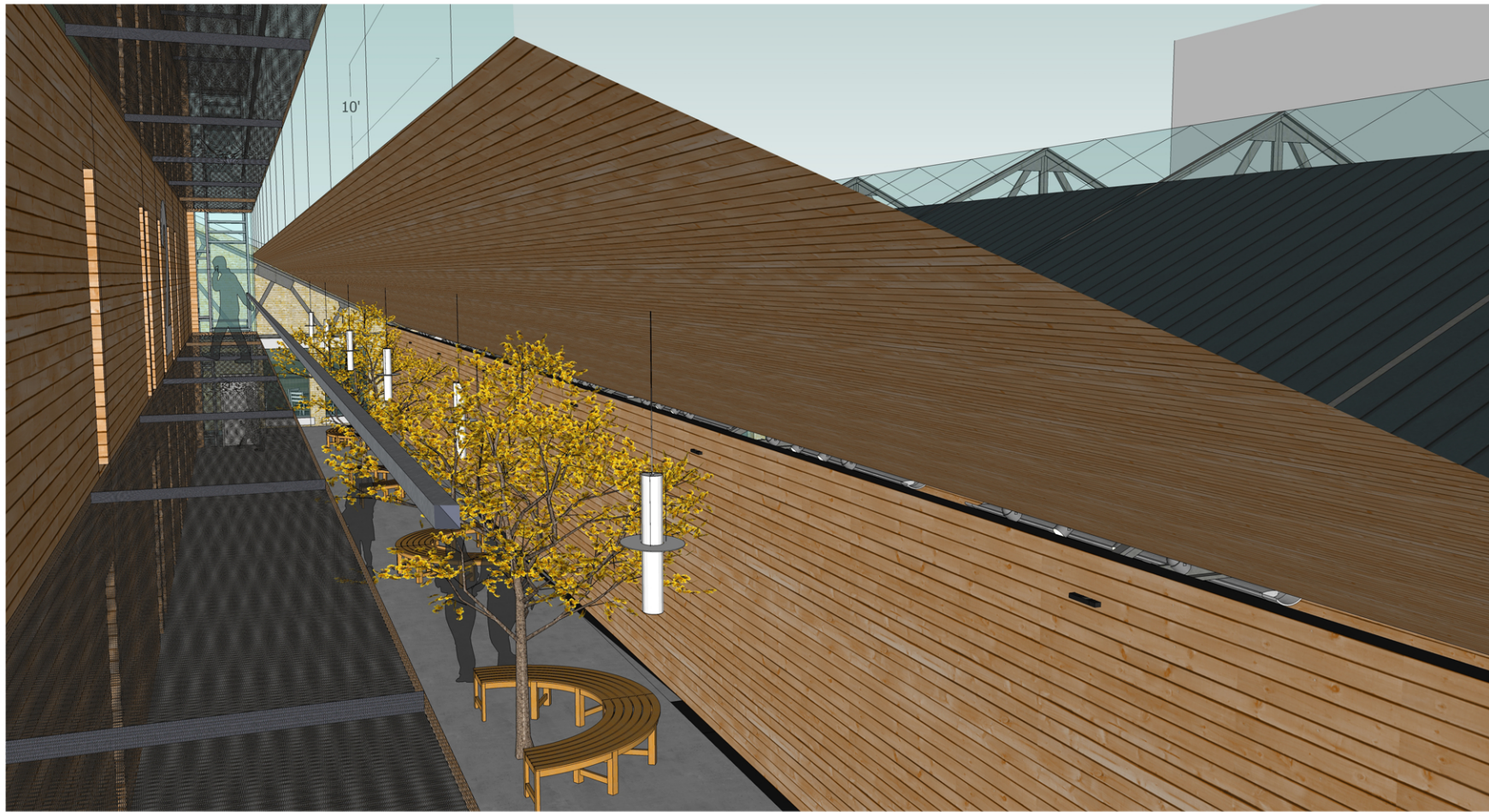
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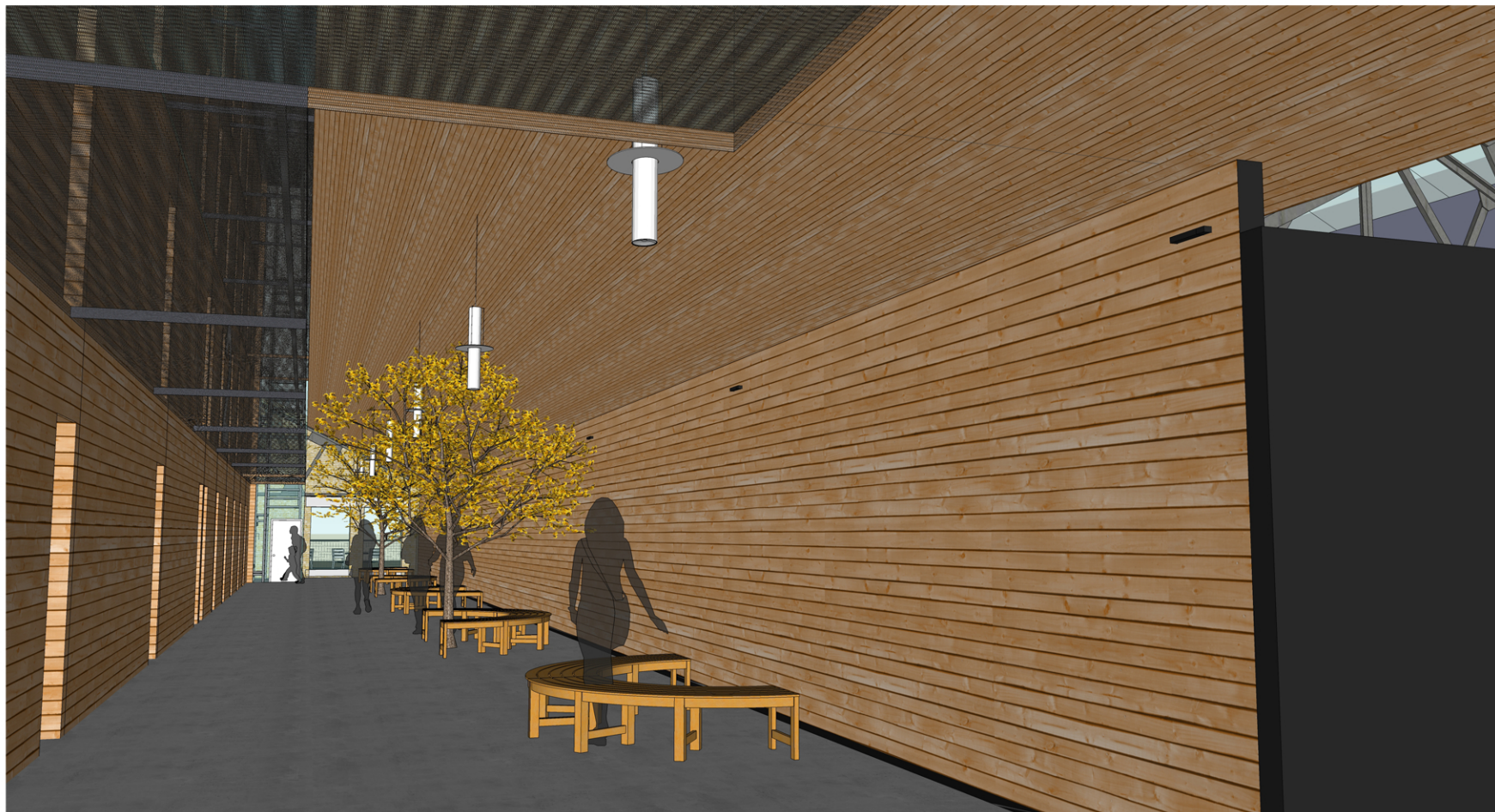
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Hallway Perspective



Corridor Perspective

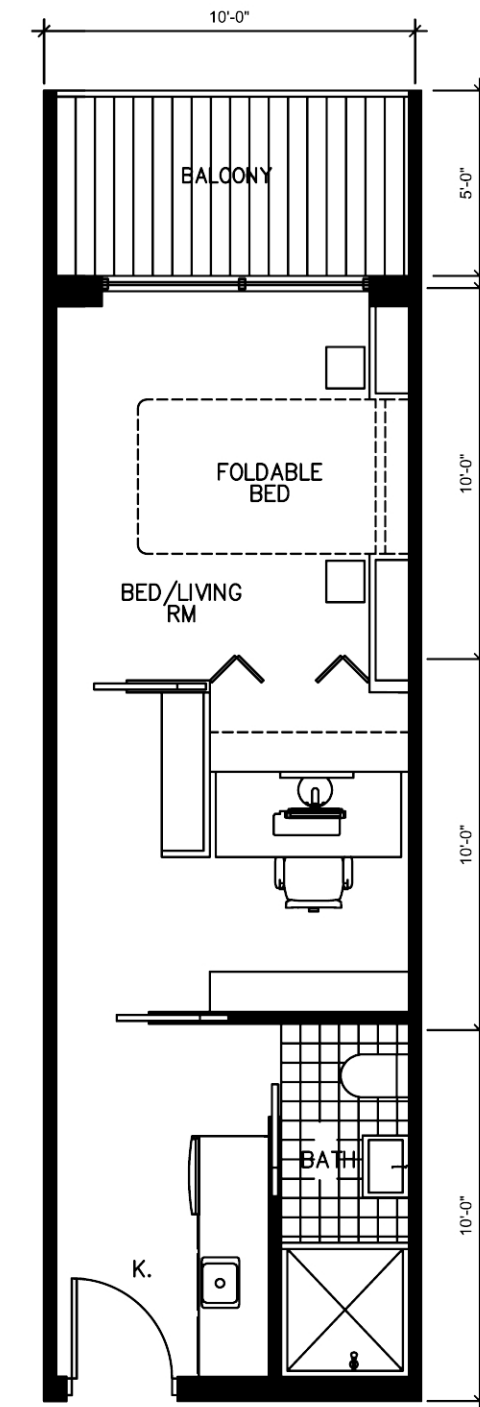
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Isometrics

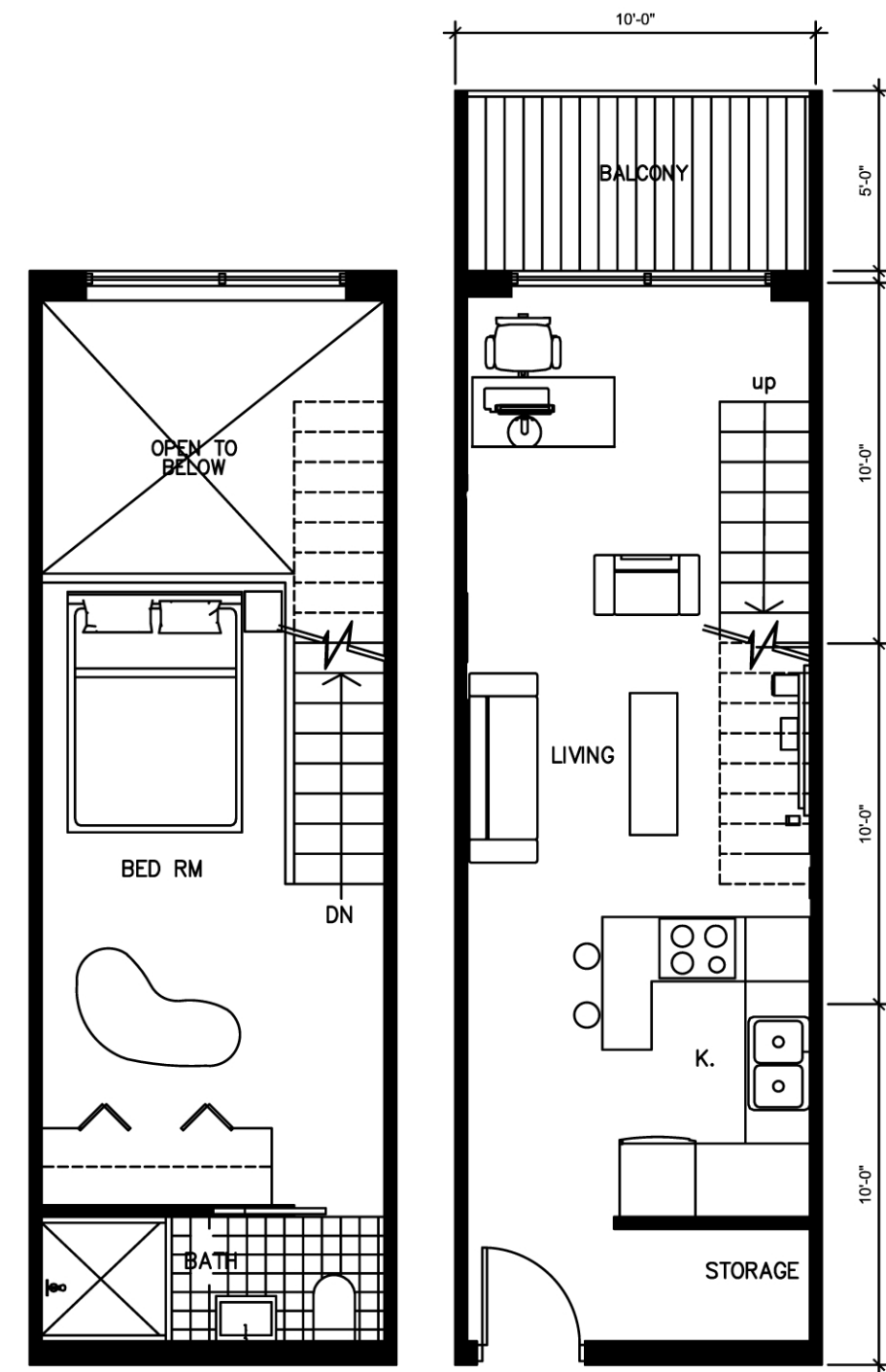


Type A

Studio Suite Plan
SCALE: $\frac{3}{16}'' = 1'$



Isometrics

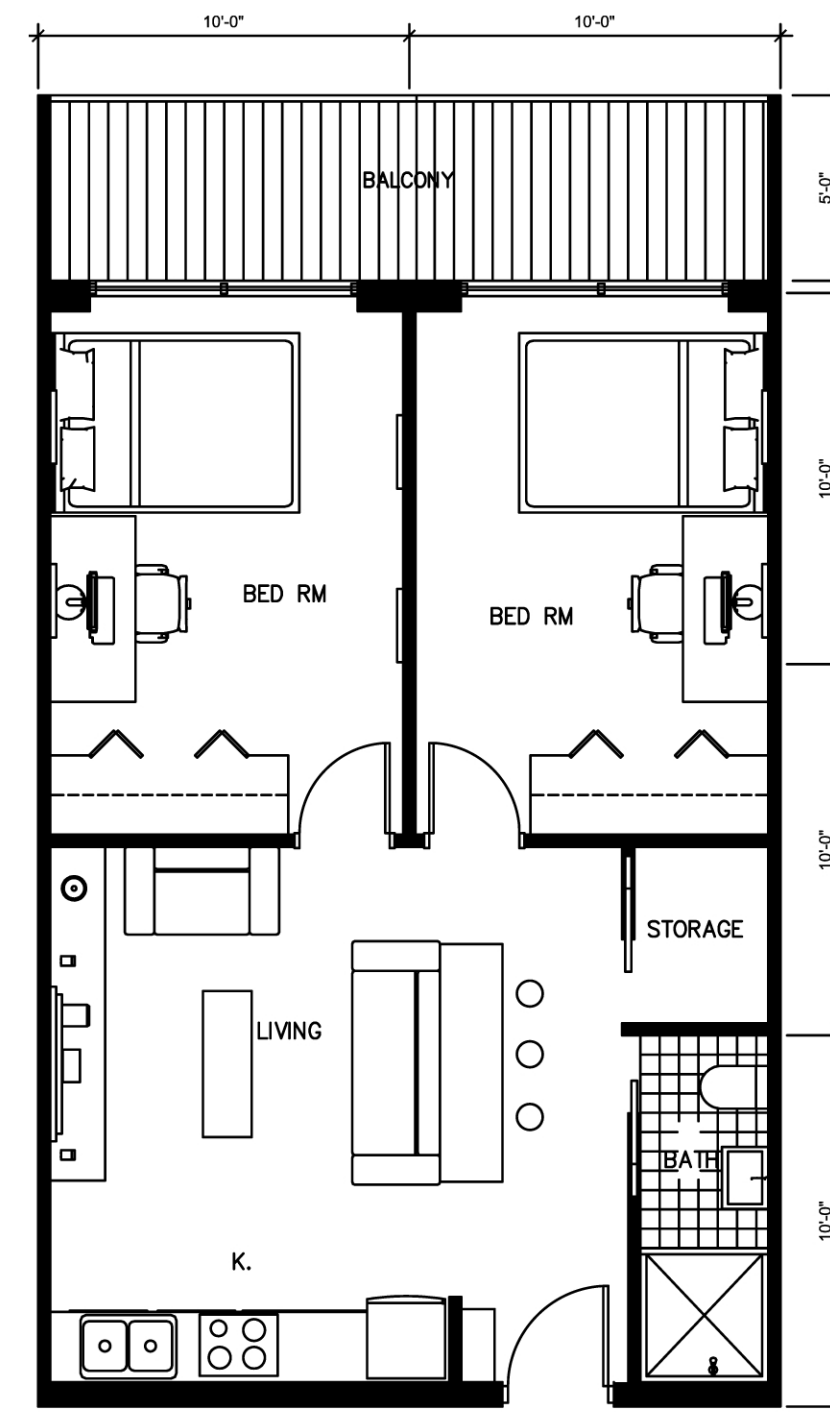


Type B

Loft Suite Plan
SCALE: 3/16" = 1'



Isometrics

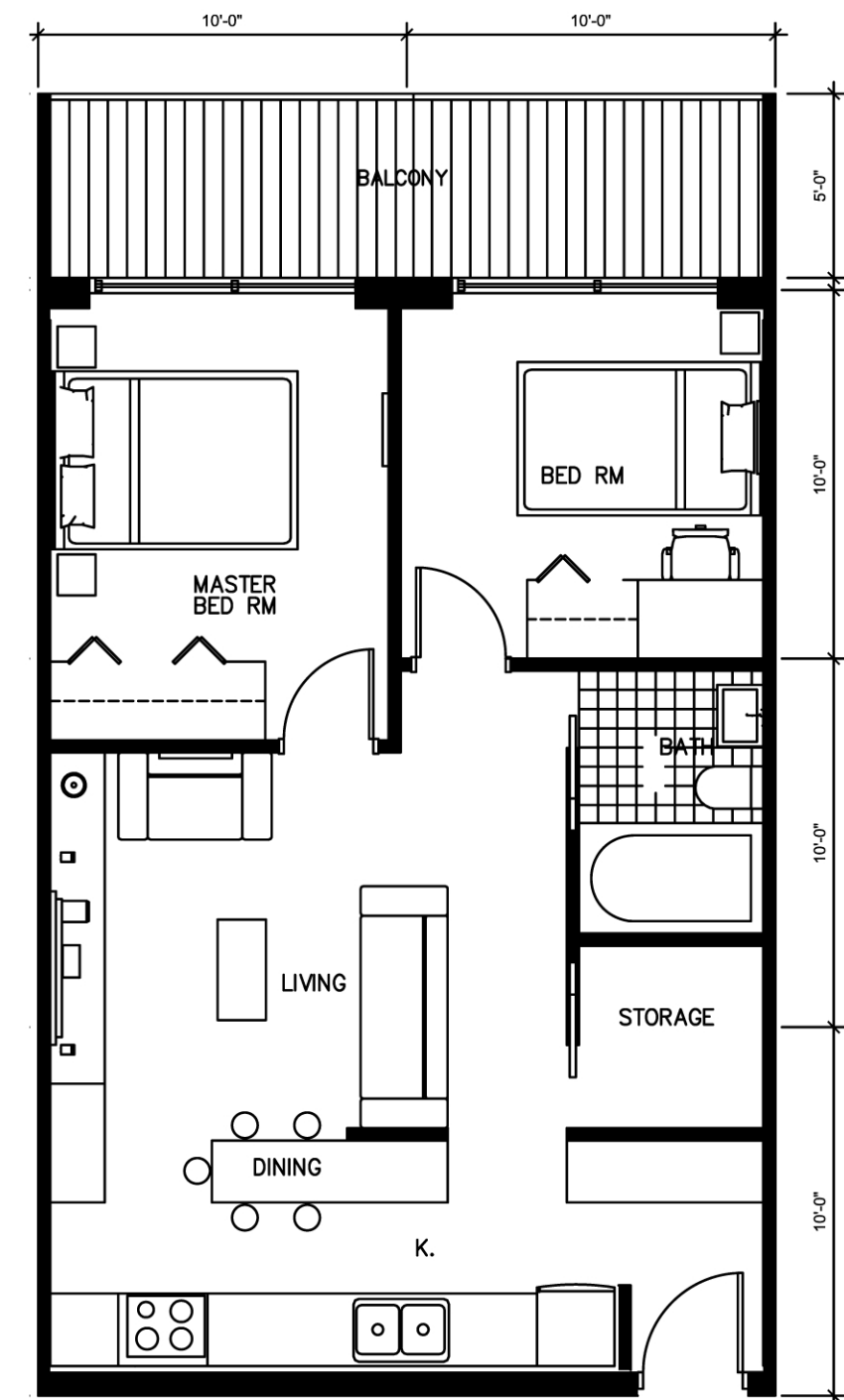


Type C

Two Bedroom Suite Plan
SCALE: $\frac{3}{16}'' = 1'$

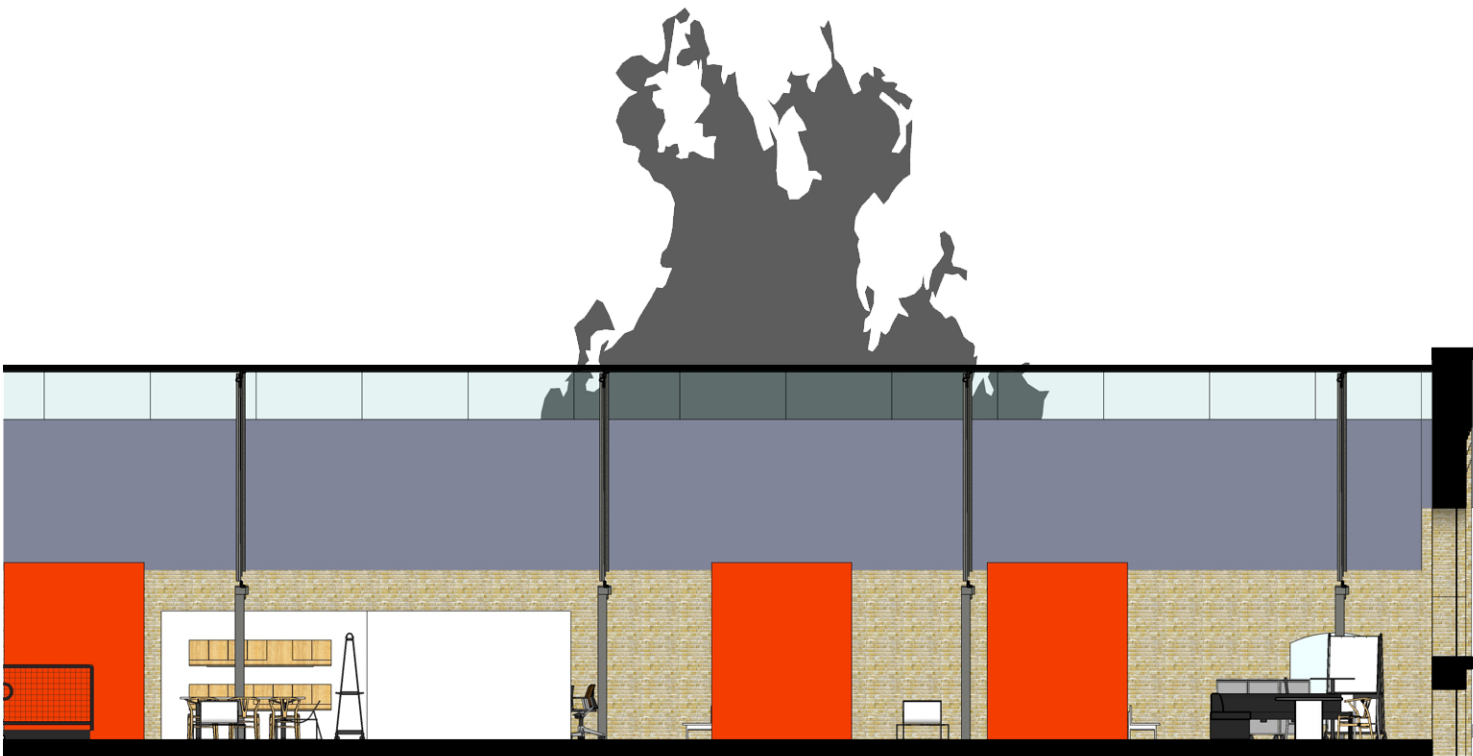


Isometrics

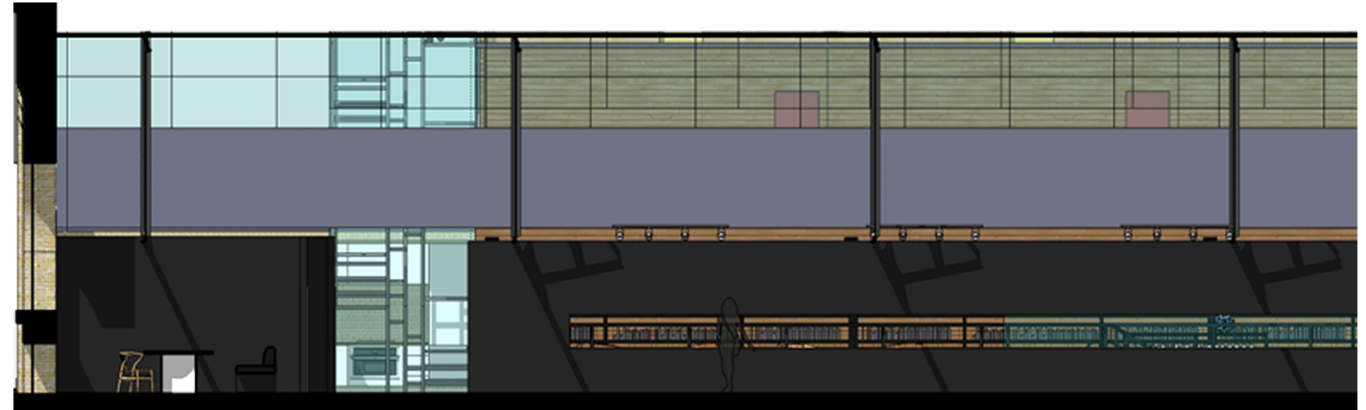


Type D

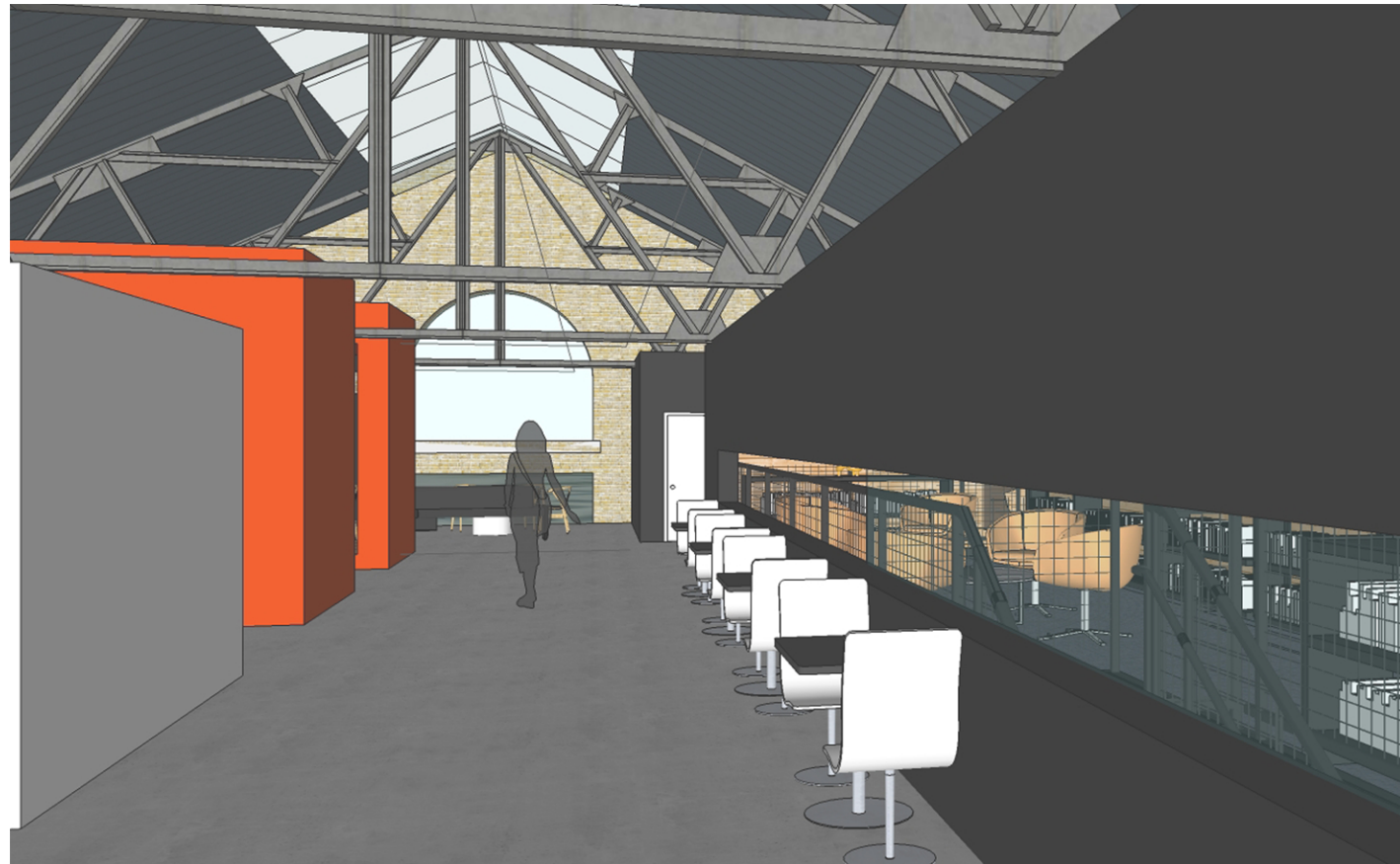
Family Suite Slan
SCALE: $\frac{3}{16}'' = 1'$



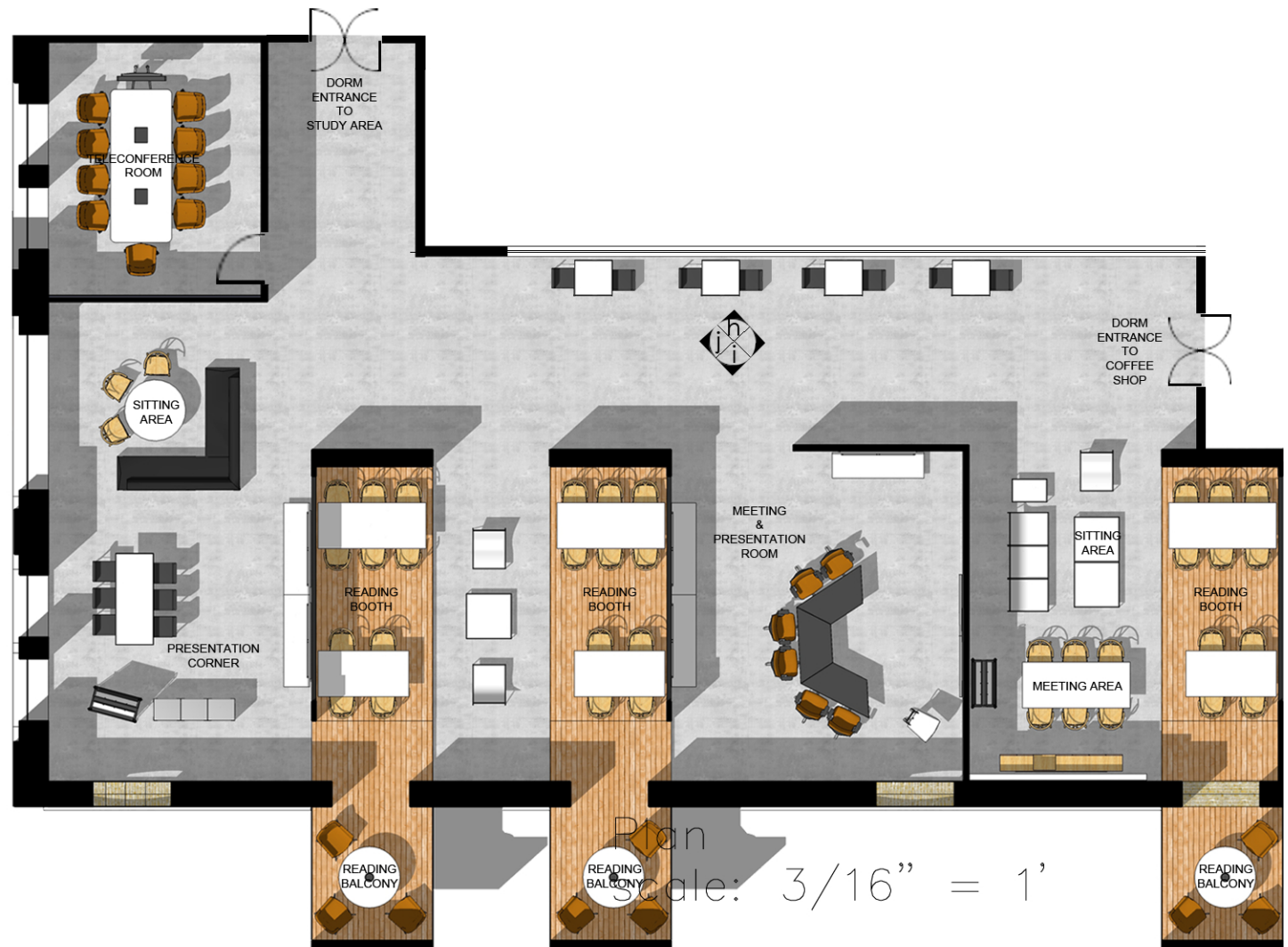
(i) Interior Elevation
scale: $3/16'' = 1'$



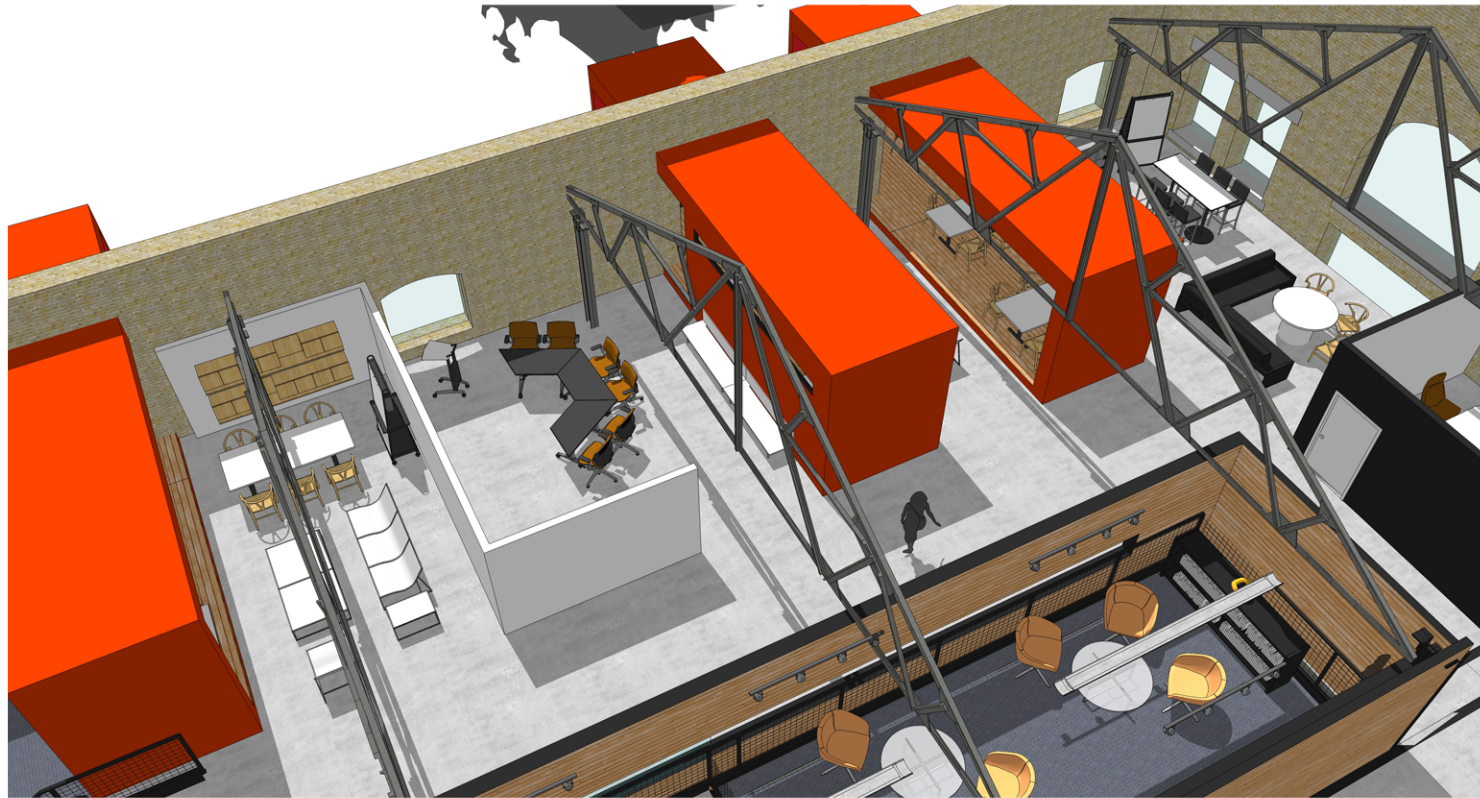
(h) Interior Elevation
scale: $3/16'' = 1'$



(j) Interior Elevation
& Perspective



Plan
scale: $3/16'' = 1'$



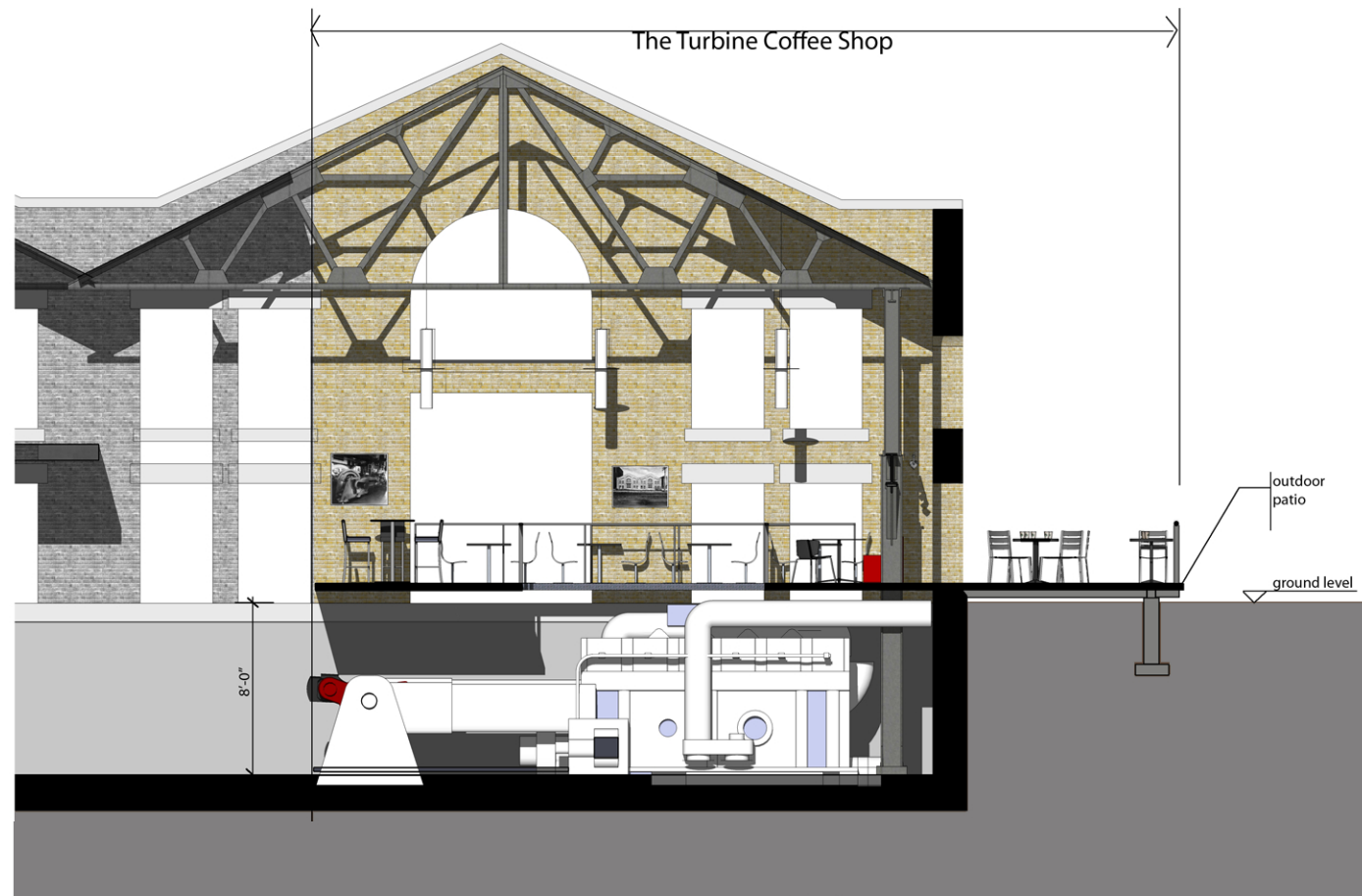
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May, 2010
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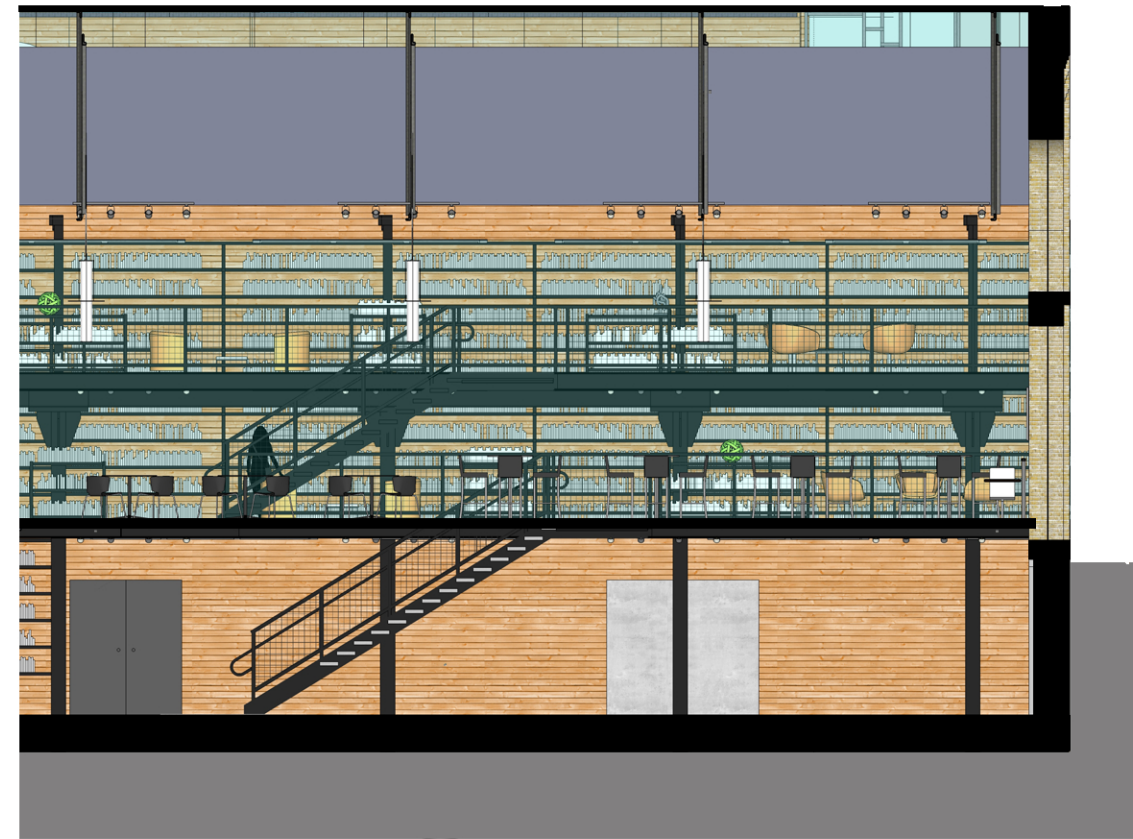


ACTIVE LEARNING CENTRE
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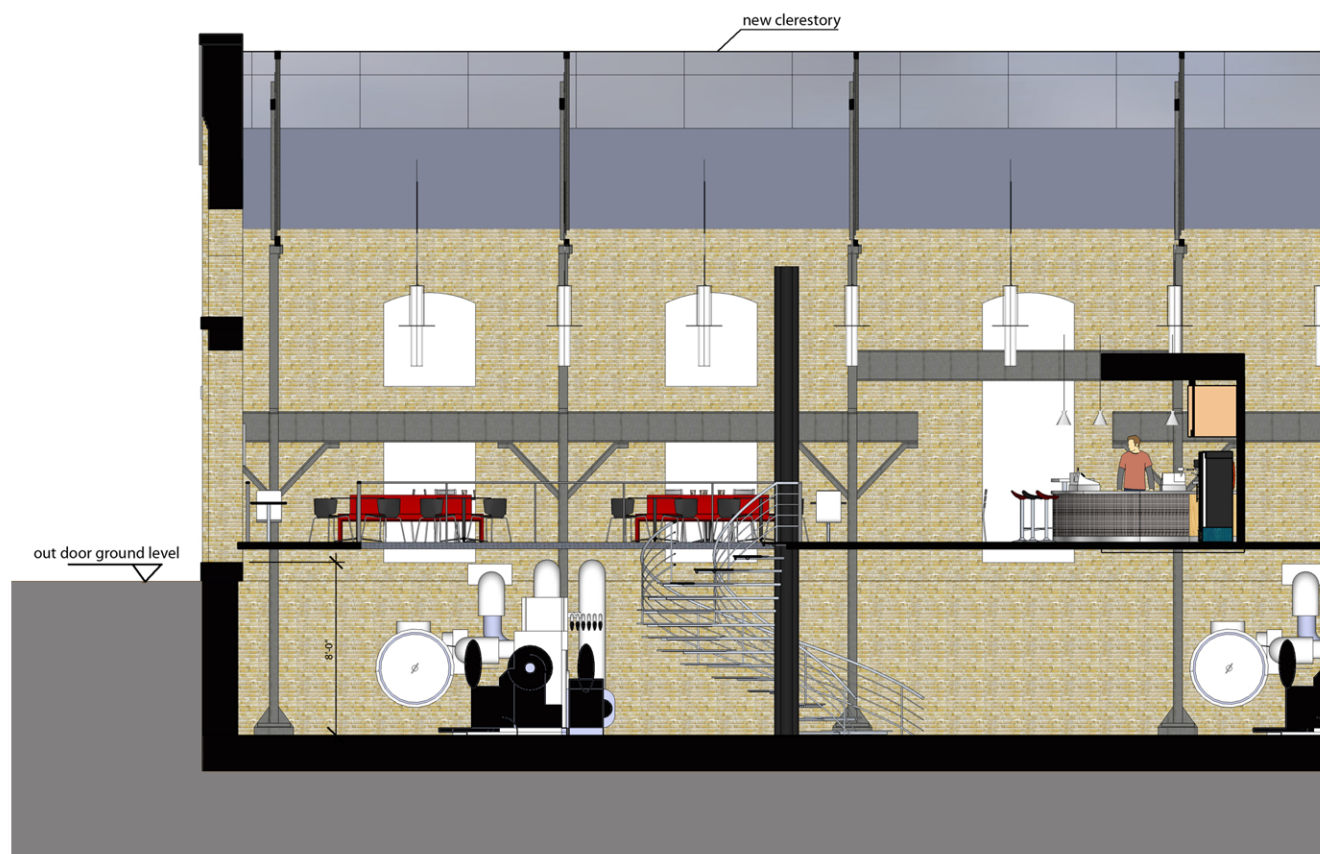
Perspectives



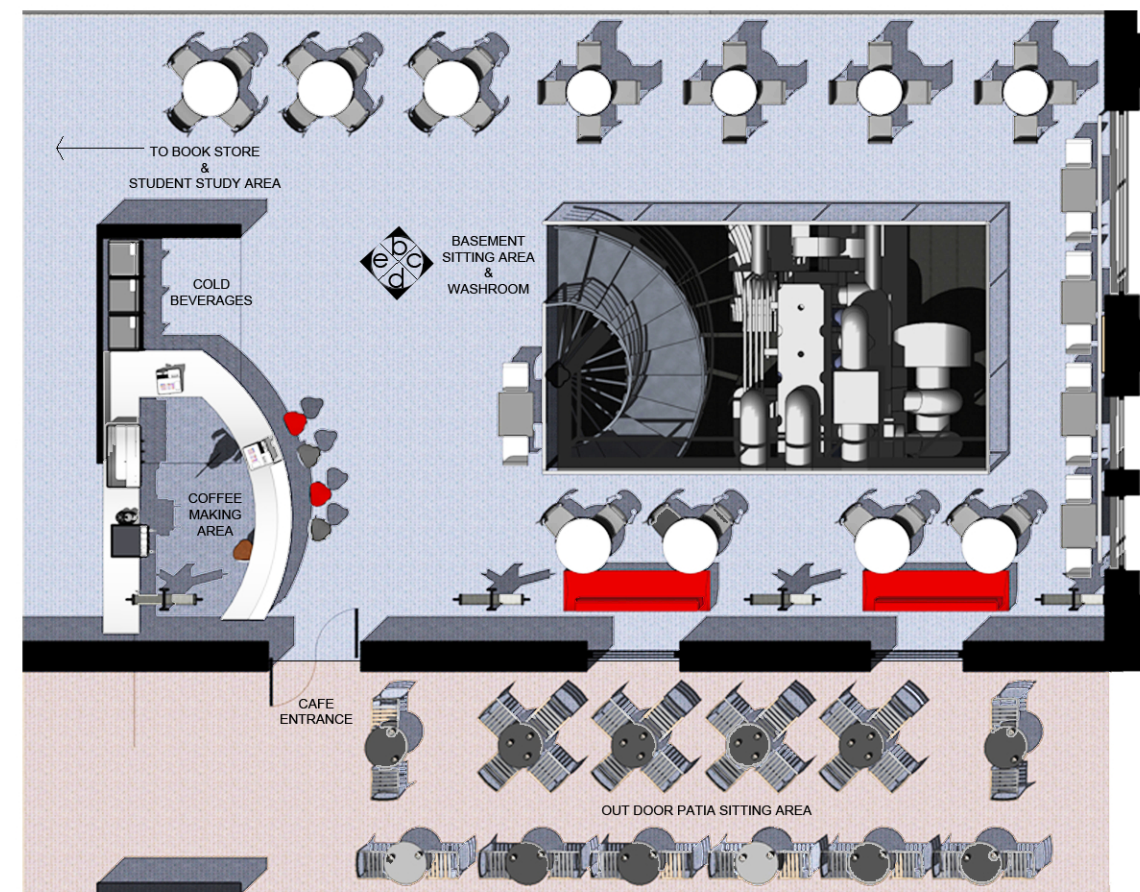
(c) Interior Elevation
scale: $1/8'' = 1'$



(b) Interior Elevation
scale: $1/8'' = 1'$



(d) Interior Elevation
scale: $1/8'' = 1'$



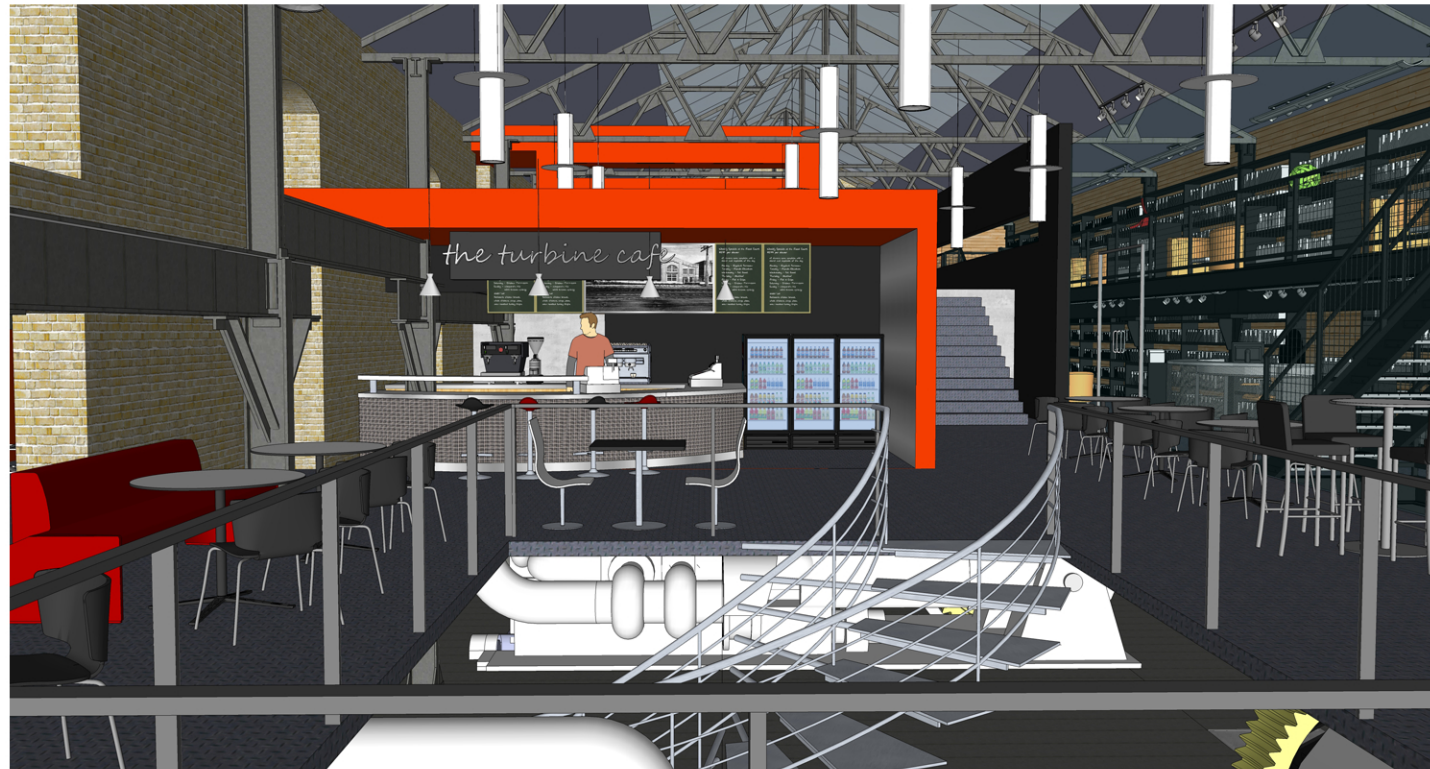
Plan
scale: $1/8'' = 1'$



e Interior Elevation
scale: $\frac{3}{8}'' = 1'$



Perspective



Perspective

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THE TURBINE CAFE

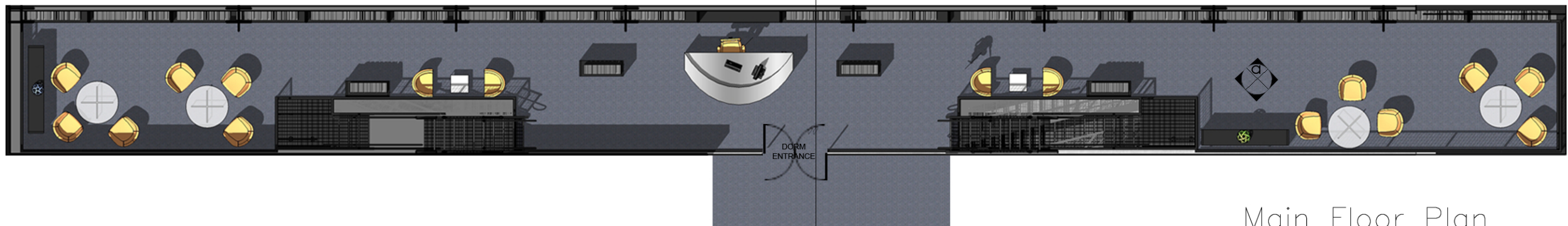
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(a) Elevation
scale: $\frac{3}{32}'' = 1'$

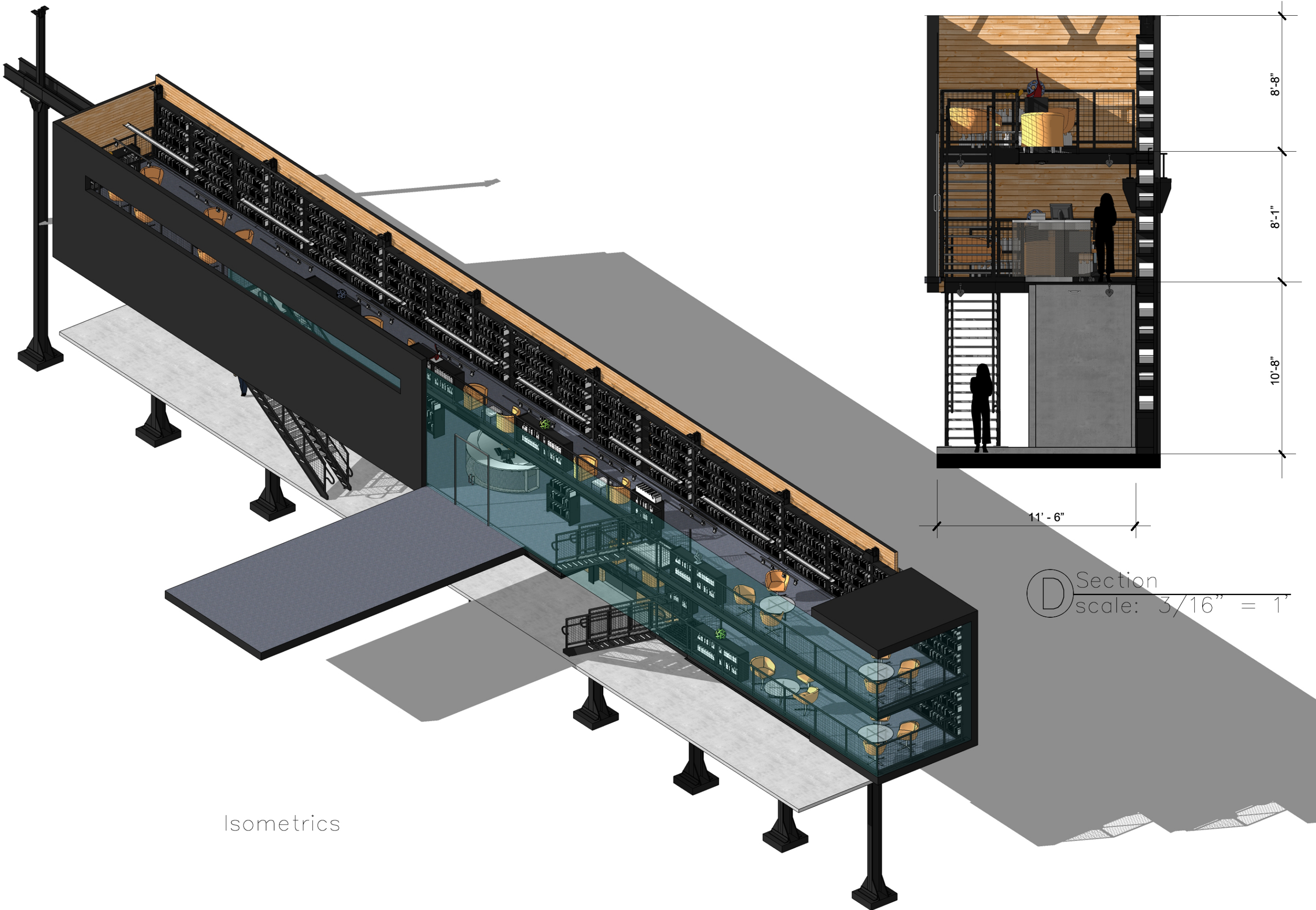


2nd Floor Plan
scale: $\frac{3}{32}'' = 1'$



Main Floor Plan
scale: $\frac{3}{32}'' = 1'$





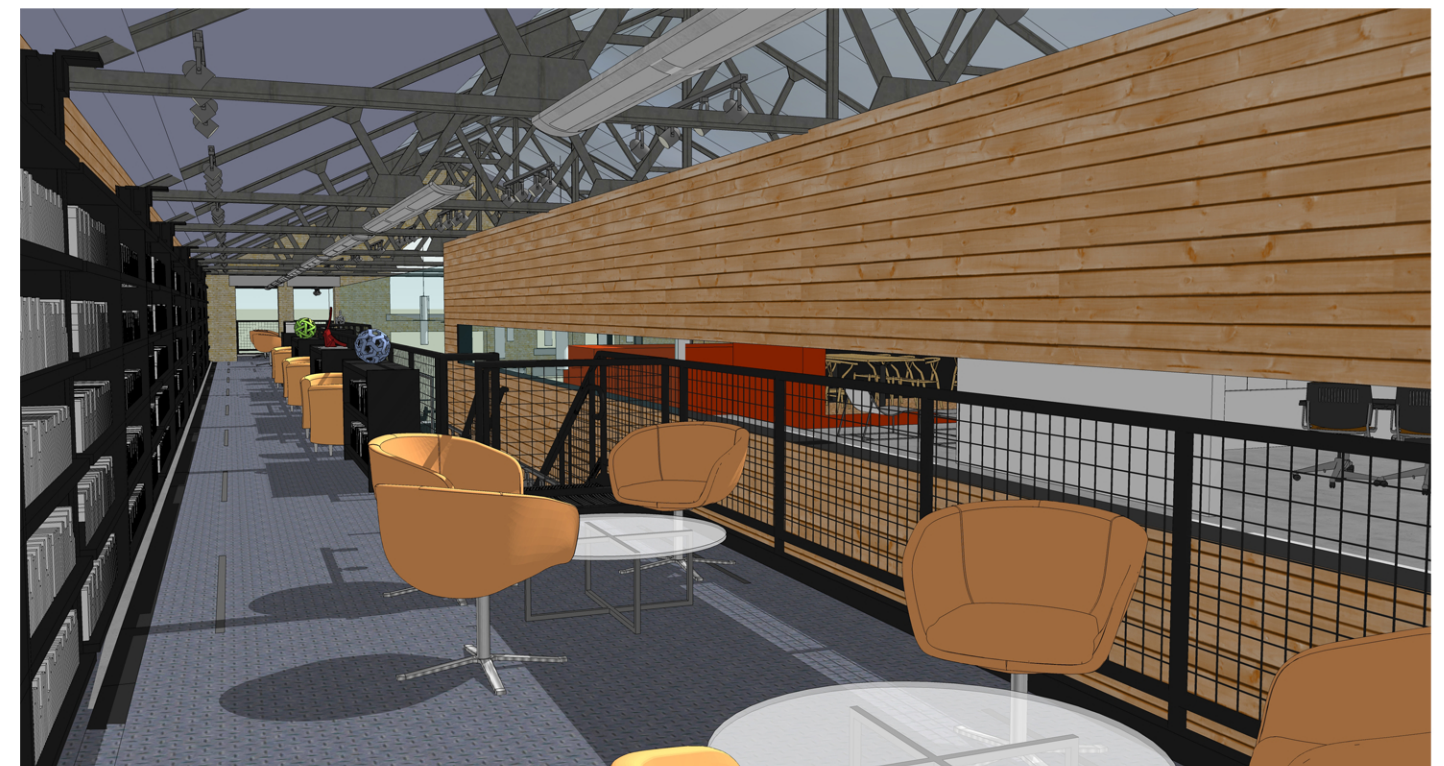
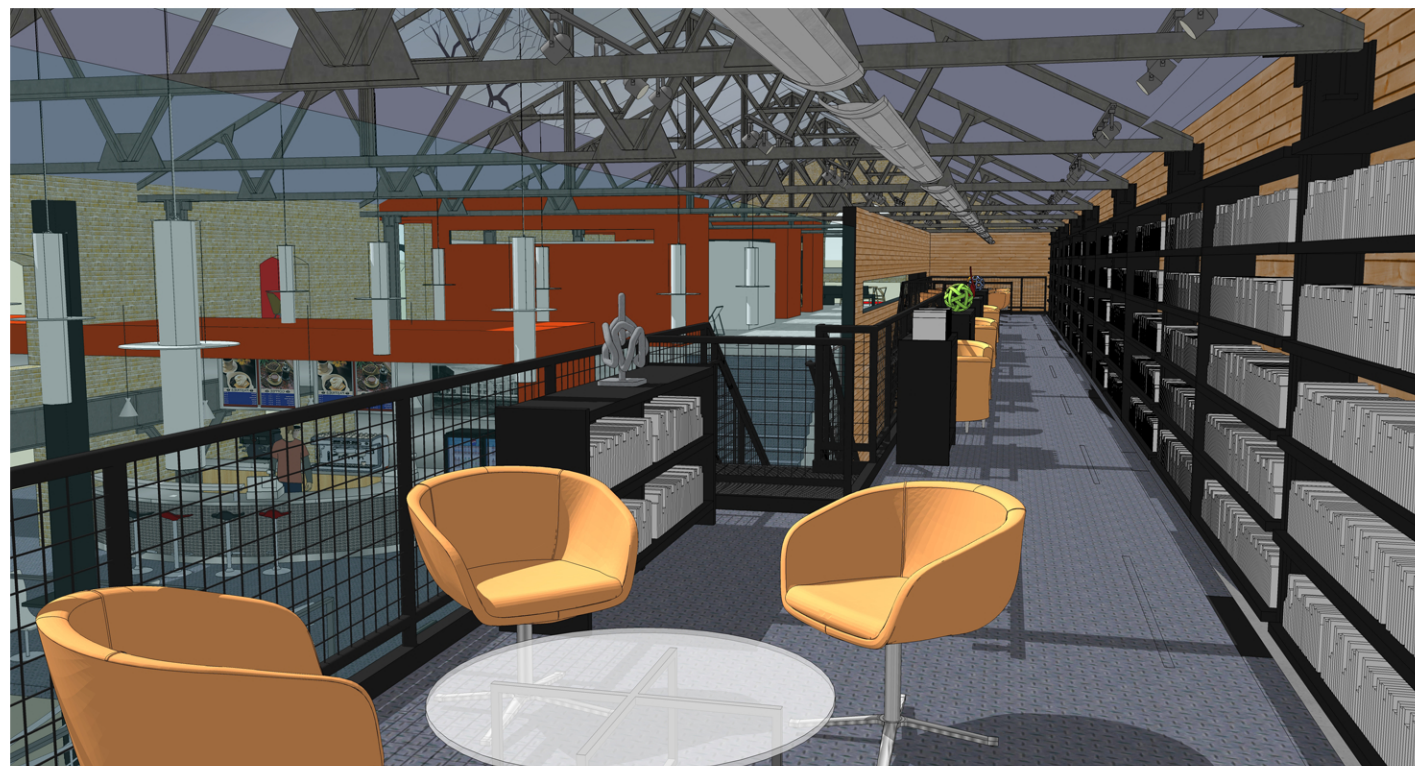
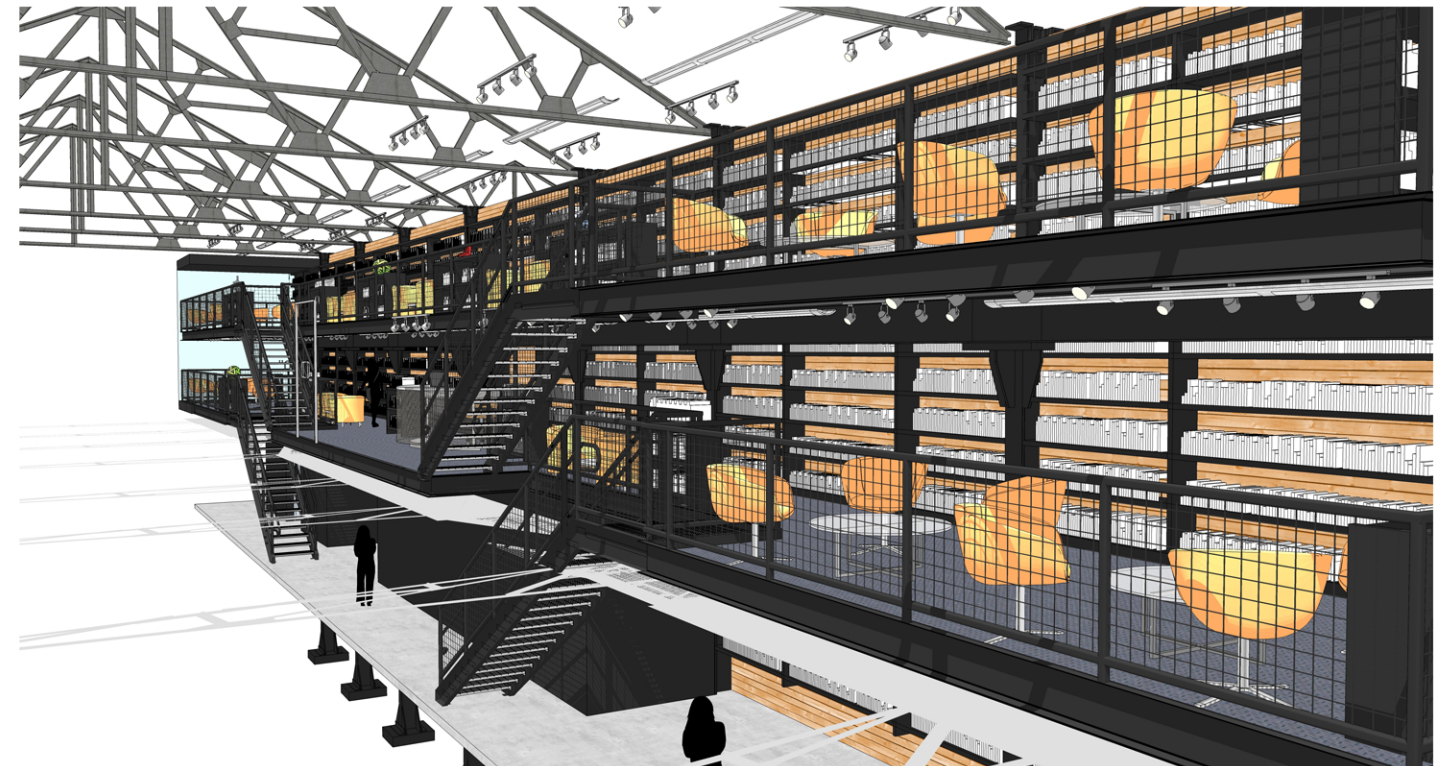
Isometrics

Section
scale: $\frac{3}{16}" = 1'$

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Perspectives

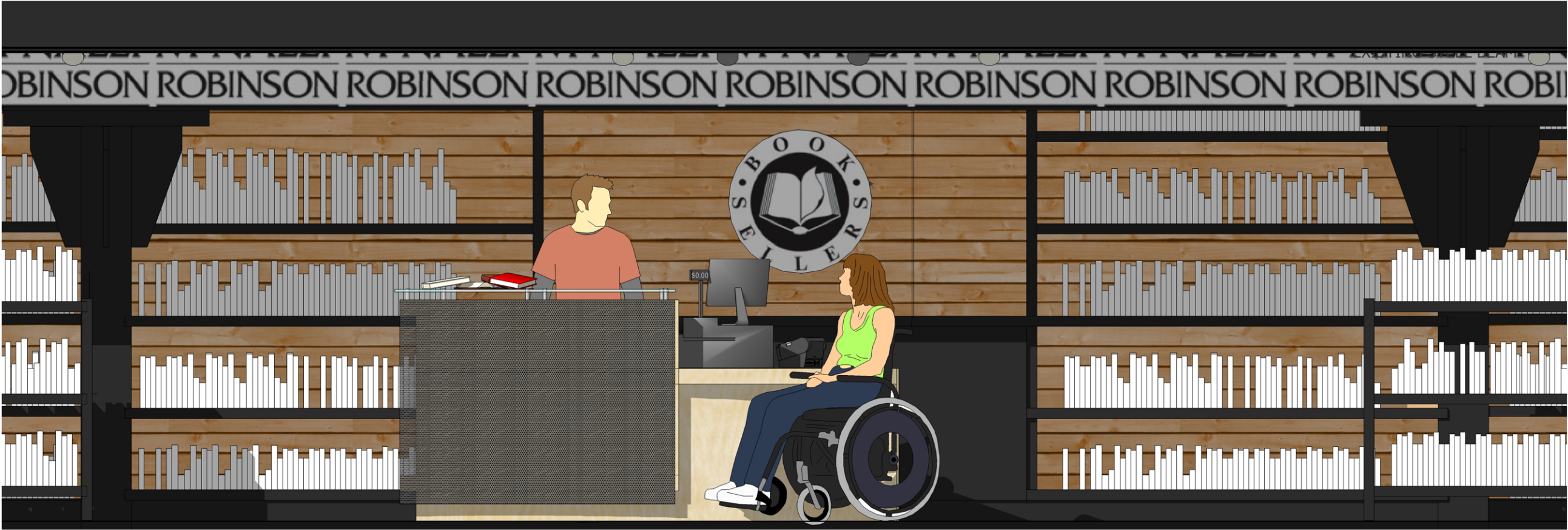
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Cashier Desk and Logo Wall

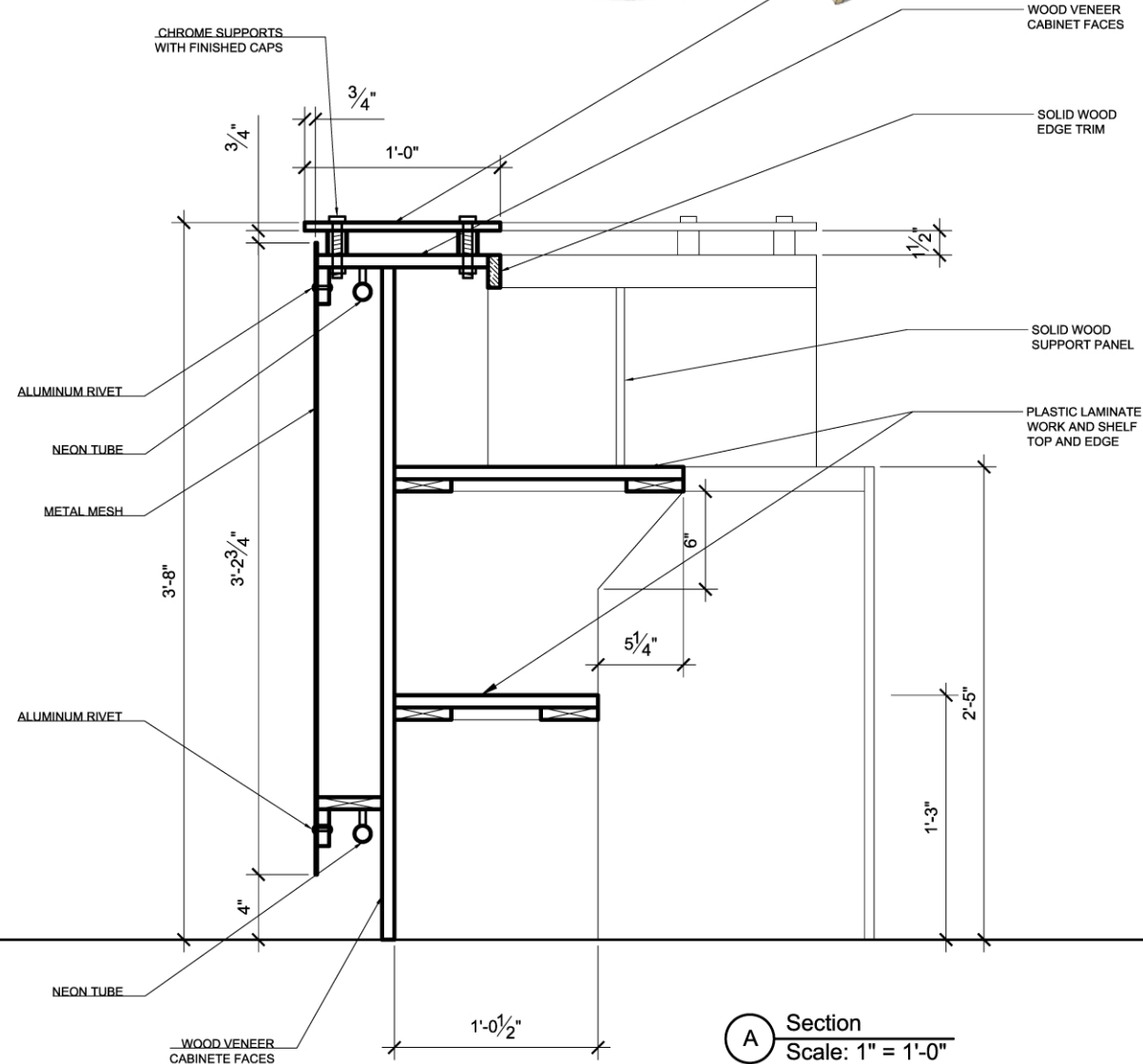
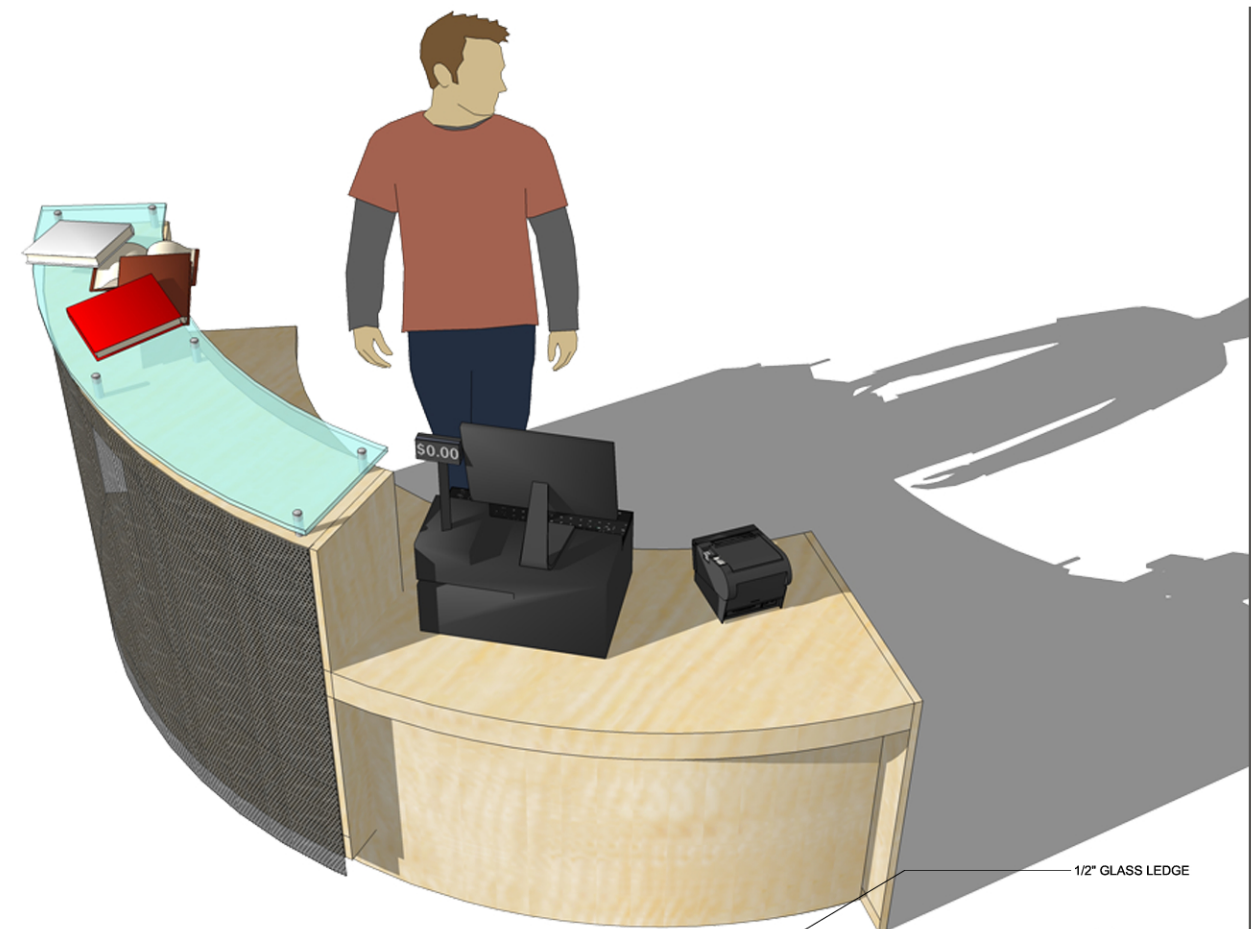
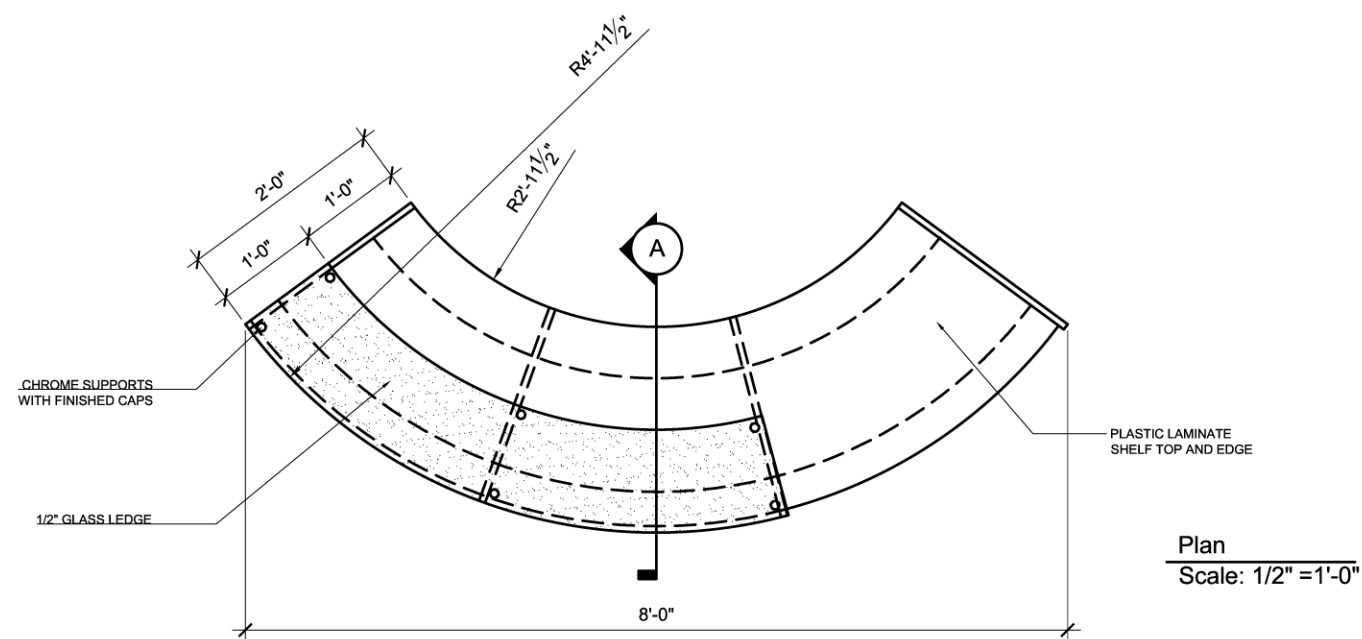
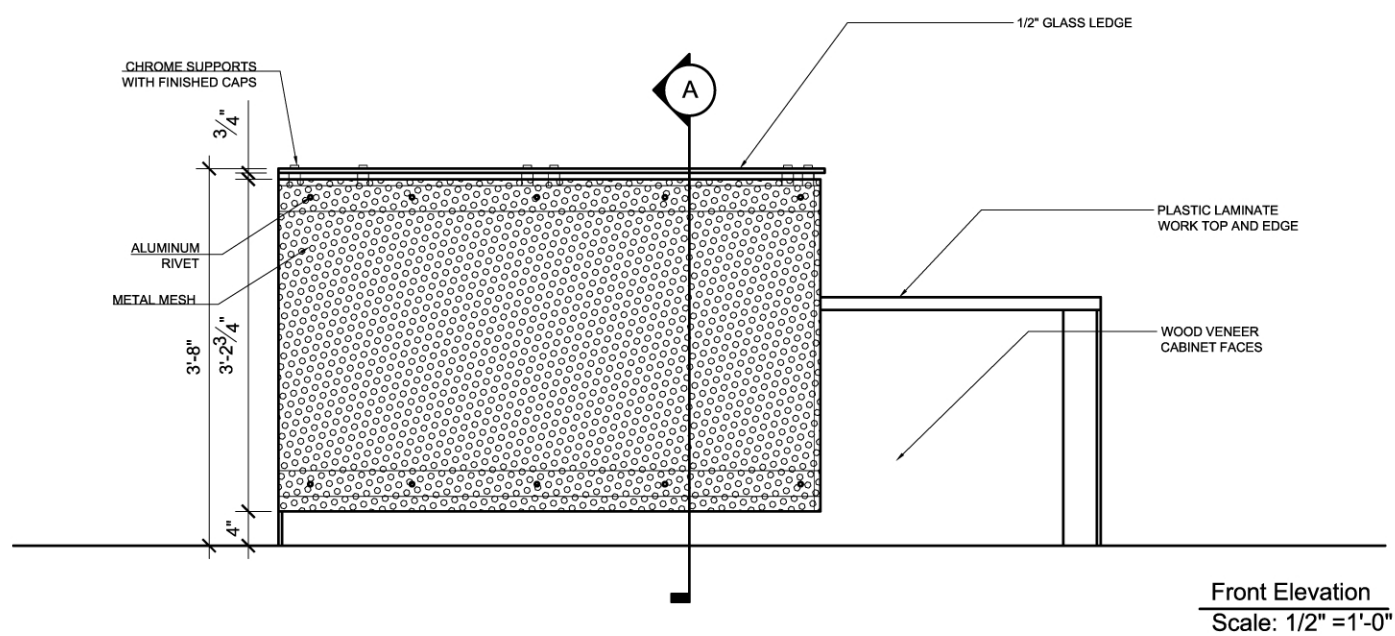
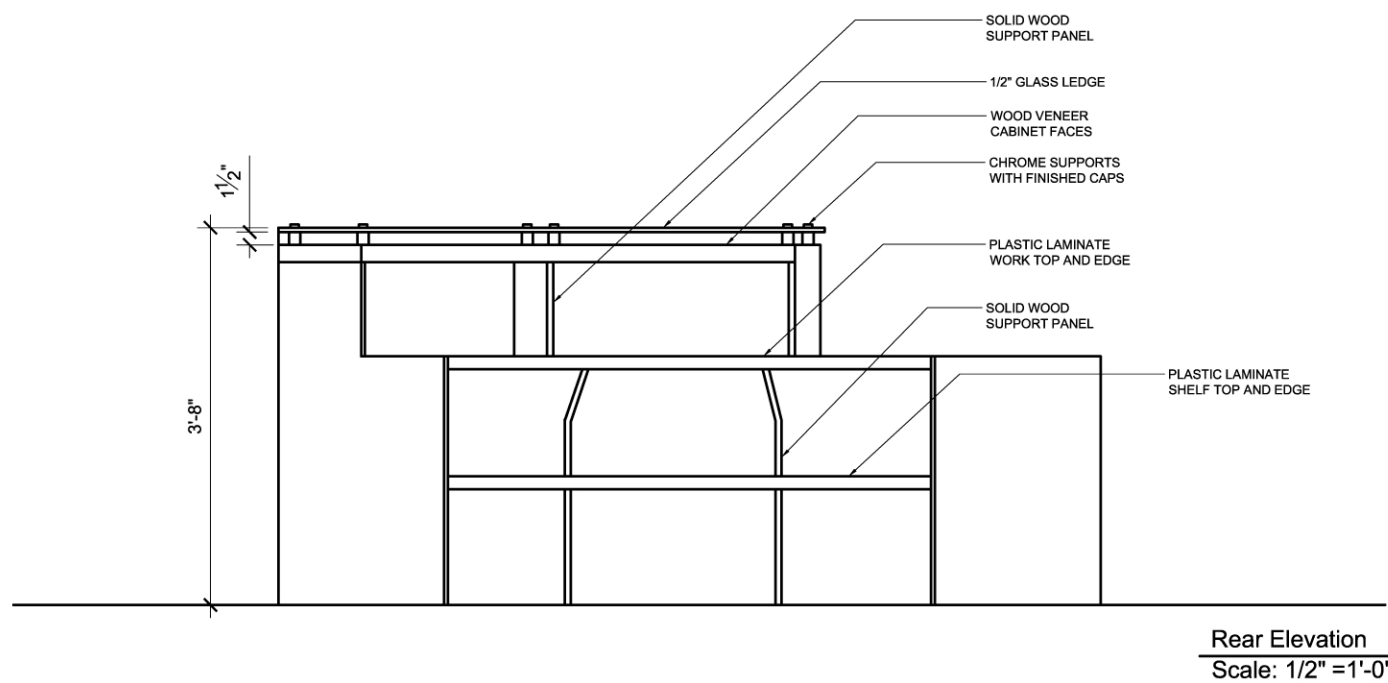


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BOOKSTORE CASHIER DESK

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